

SOIL CONSERVATION

HENRY A. WALLACE
Secretary of Agriculture

VOL. IV • NO. 2



H. H. BENNETT
Chief, Soil Conservation Service

AUGUST • 1938

ISSUED MONTHLY BY THE SOIL CONSERVATION SERVICE, DEPARTMENT OF AGRICULTURE, WASHINGTON



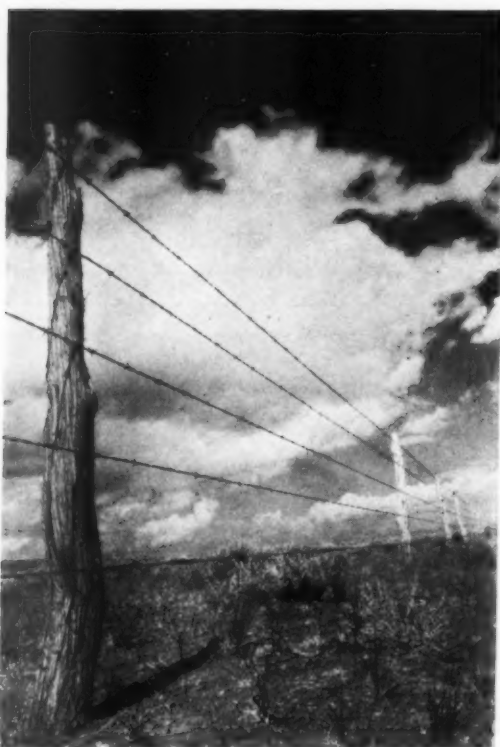
Programs "rise from the soil and from the needs of the people who depend on the soil."

Introductory Statement

THIS is the second of two numbers of SOIL CONSERVATION which deal with the land programs of the Department of Agriculture. The articles in the July number set forth a description of the objectives of programs and of operations on the land. The articles in this number delve more deeply. They tell something of the planning behind the programs. They tell how the programs come into being. While

reading them I found a single theme recurring: The programs of the Department are shown to rise from the soil and from the needs of the people who depend on the soil. Perhaps this theme may be summed up in the phrase "Democracy in land use."

M. S. EISENHOWER,
Coordinator of Land Use Planning.



Fences segregate fields but cannot cut through the overlapping interests of neighbors.

BEFORE 1933 it would have seemed strange had anyone written on the subject of farmer participation in agricultural planning. Who besides the farmer, it might have been asked, should participate in such planning? What agricultural planning is there other than individual farm planning? And even if each individual farmer does not do the best conceivable job of planning his own work, what reason is there for anyone else to participate in his planning operations except to make available to him information that he is free to use as he pleases? Not only would these questions have been asked then, but many people are still asking them.

Particularly during the last 5 years, however, there have been significant developments in public planning of rural land use. These were described in the July issue of *SOIL CONSERVATION* which dealt with planning programs of various agencies of the Department of Agriculture. Such planning is exerting increasingly important influences upon planning by individual farm operators.

It was not only inevitable but appropriate that the emergency programs of these agencies should have been

Farmer Participation

By M. L. Wilson

Under Secretary of Agriculture

planned in large measure by the experts and public officials legally responsible for their administration. But if public programs for agricultural adjustment and land use are to be permanent features of our agricultural economy, as I think they will be, it is important that farmer leaders in the counties, in the States, and in the Nation, play a dominant role not only in determining the broad outlines of such programs, but also in adapting them to the exceedingly complex variations in local conditions.

The most impelling reasons for active farmer participation in public agricultural planning are, first, to ensure practicability in the goals and procedures established and, second, to obtain general acceptance by farmers of the plans developed. These are obvious reasons which almost anyone would promptly suggest—reasons fully supported by recent experience of Department officials with the programs of the Agricultural Adjustment Administration, Soil Conservation Service, Farm Security Administration, and other agencies.

Yet there is a persistent tendency to rely upon expert opinion alone, and to follow the easier method of basing action upon official decisions rather than by the slower process of widespread discussion by, and consultation with, local as well as national farm leaders. This tendency we must guard against with increasing vigilance if we are to avoid a return to the futility of *laissez-faire* or the development of some of the distasteful consequences of bureaucracy.

As a matter of fact, extreme individualism is not one of the alternatives available to us. The real choice is between the democratic and the arbitrary procedures for developing and administering public agricultural programs, and even this choice is one of degree. Our problem is one of keeping at a practical minimum the arbitrary aspects of necessary collective action. In this task there is no substitute for widespread farmer participation in the actual planning of programs, and discussion is the principal technique for such participation. It was in recognition of the need for working out agreement between local, State, and National leaders that county agricultural planning and group discussion has been sponsored by the Department of Agriculture. Some 2,400 counties now have agricul-

tural planning committees, each consisting of 10 to 20 farm men and women who are engaged in determining desirable changes in land use and farm practice.

Since understanding is the first prerequisite for resolving local, State, and National points of view into a workable program, and since there can be no understanding unless the pertinent facts and judgments are available to all groups, it is intended that this planning organization shall serve as a part of the necessary mechanism for transmitting facts and judgments between local and national leaders. No particular organization, of course, automatically ensures agreement as to policies and programs. Agreement almost always must be a compromise in points of view, even if based on the same facts.

This truism has peculiar significance with respect to the relation between the expert and the farmer. Differences between expert and farmer opinion as to needed agricultural adjustments are generally due to differences in available information upon which the opinions are based, but this does not necessarily mean that the farmer has less information. It may mean only that each has different kinds of information, all of which are needed in formulating an adequate program. The expert is often a specialist with vision for only one aspect of a problem. Though the farmer may not see that particular aspect so clearly, he is just as likely to see other pertinent phases of his problem that the specialist overlooks. Beyond this is the fact that policy judgments might differ for reasons no more tangible than differences in social philosophy.

Thus I conclude that no group of people is more suited to synthesize the judgments of specialists and to forge them into workable programs than responsible farm leaders who know farming as only experienced farmers can know it. This is only another way of describing the democratic principle which requires experts and specialists to function as advisers to representative laymen. Democracy is not government by experts. The best democracy is government with the aid of experts. It is upon this philosophy that the present Department of Agriculture is attempting to build agricultural planning. Because of this philosophy, the Department holds that a program which moves in the right direction, though not quite representing perfection in the eyes of the expert, is preferable to no program at all. This approach is pragmatic and is based on the conviction that planning in a vacuum will be no more effective in improving farm life than "equilibrium economists" have been helpful in social reform. Its premise is that economics is a social process; not an "equilibrium of forces."

To avoid "planning in a vacuum," and thereby to sustain farmer interest in participation in planning, the Department now proposes that in each State and in each county the official representatives of each State and Federal agency having responsibility for land-use programs, meet with the farmer planning committees in an effort to relate planning to administration. It is not reasonable to suppose that farmers will continue to render volunteer service in public planning if there is no evidence that their efforts are being translated into action. Nor will they function effectively if Federal and State officials attempt to dominate or to operate other than as consultants and advisers.

Here, therefore, are twin problems of real magnitude. I know of no institution or group of institutions as well equipped, both with experience and facilities, for dealing with these problems as the land-grant colleges and the universities. The State extension organizations, with county agents in each county, have long since learned that their most effective work is done through farm leaders. The most successful of their agents have learned to get behind farm leaders and advise rather than "tell them." They have accepted as a major responsibility the task of developing farm leadership in its broadest sense. The experiment stations with their research staffs are, by and large, the best qualified agencies to assemble and provide information needed to fill the gaps disclosed by planning work. Merely to list the public facilities which are available for helping farmers participate in public planning is to show that the task is not something entirely unrelated to what has been done in the past. It is, rather, a logical extension and adaptation of existing procedures to meet changing conditions.

Planning by farmers for public programs involves both an ideal and a reality. Progress thus far represents merely a beginning, but only a short period of time has elapsed since the need for it became apparent. The ideal will be approached as the enormous latent forces are marshaled and coordinated for its achievement. It is perfectly clear that American agriculture, which includes the United States Department of Agriculture and the land-grant colleges, is rapidly shifting its internal relationships, in response to world-wide and domestic forces, so as to meet the necessity of public action and at the same time create a form of economic democracy unknown anywhere else in the world. The essence of this shift is American, and it represents progress in our own way. Farmers not only continue to plan their own individual farm operations, but farmer leaders in every community are playing an ever-expanding role in planning public programs.

Over-All Planning—The Next Step



By E. H. Wiecking
Associate Coordinator
of
Land Use Planning

Perspective is needed in the planning of a modern agricultural economy.

ALL intelligent action—public and private—must be planned in advance. Whether the planning process be brief or prolonged, simple or in great detail, directed toward the action of tomorrow or that of 10 years from tomorrow, the essence of planning is forethought—thinking ahead.

Over-all agricultural planning is the fitting together of all public-action programs so that they will reach the watershed, the locality, or the farm as a coordinated and unified attack on local as well as national problems. Such planning involves the effort to see that none of the programs is working at cross purposes, and that all work together efficiently and economically to promote human welfare through a better use of our land, water, and associated resources. Obviously, such planning embraces more than Federal action alone; essential lines of action lie within the province of the States, and still other vital types of action depend upon local initiative. Among other things, therefore, the task involves close cooperation between the Department of Agriculture and the land-grant colleges—the primary public agencies best equipped for agricultural research, planning, and education.

The most useful type of planning requires the consideration of many factors, some of which are outlined and discussed in this article. In the first place, all of us must clearly recognize that out on the watershed and on the farm, where our real job lies, we are dealing with a complex of interrelated factors—dealing not with one problem but with a bundle of problems.

Action to correct one phase of a land-use problem may be nullified by lack of adjustment in other factors that impinge heavily upon it. Or, single-line action, with respect to one factor, may throw other factors in the problem out of line.

The task of controlling erosion, for example, cannot be confined to the construction of terraces, or to the restoration of more land to grass or other vegetative cover. In many situations, the agronomic requirements for erosion control would seriously curtail farm income, and possibly the tax income of the local units of government, unless a change were made either in the type of farming or in the size of farm operating units, or both. In a significant recent study by the Iowa Agricultural Experiment Station, soil erosion and the extent of tenancy were shown to be highly correlated. That study brought forth another important element in the erosion-control problem—credit. The extent and degree of erosion varied with the debt load per acre. In some States existing State laws and policies on assessment and taxation stand in the way of the type of land use necessary for soil conservation.

Again, in parts of many "problem areas" one will find that application of the accepted methods of erosion control is either technically impracticable or financially prohibitive, so that for those parts the conclusion might well be retirement from cultivation. Obviously, this raises the question of the people involved, and immediately one is faced with some very real problems of human adjustment. Possibly through relocation

of the present occupants, and dedication of the submarginal land to public forestry, an economy can be built up which will combine farming with forest income. Furthermore, investigation may show that in this submarginal land area, the roads, schools, and other public services are maintained only because of heavy grants-in-aid by the county or State, or from other sources—this in view of the fact that the low productivity of the area makes impossible tax payments sufficient for even reasonable self-support. And that suggests that discouragement or prevention of further settlement in such areas—through rural zoning, for example—needs to be considered, not only to prevent the opening up of new areas to erosion and deposition of the soil on good lands farther down the watersheds, but also to prevent the imposition of still heavier taxes upon the owners of good lands to be supplemented by more grants-in-aid.

Nor can one escape the influences of factors whose mainsprings may lie far outside the problem area—such things, for example, as shifts and trends in market demand, in product prices, in technology, in those frequently unapparent but nevertheless powerful underlying forces that collectively go to make up inter-regional competition.

Thus, regardless of the factor with which you start, you are soon confronted with a bundle of interrelated problems. Effective action can begin only when everyone recognizes that he is dealing with a complex of interrelated variables. How important this interrelation of factors is, can, of course, only be evaluated by analysis—which leads to a second suggestion.

This second suggestion has to do with the need for an over-all, inclusive land-use planning procedure for our rural problem areas, based upon the concept that we are dealing with a complex of interrelated factors. The development procedure may be described as having three steps:

Step 1 involves area analysis and classification. This, it is suggested, has two phases. First, area analysis, in which by field surveys and other careful studies of a problem area, we get the picture of the complex, the important factors in it and how they are related. This is essentially a task of marshaling the facts, on maps where possible, as a basis for determining policies. The second phase is area classification. In reality this is an economic land-use classification, which, also in map form, shows what the "best" long-time uses of the various classes of land in the area are judged to be, and which is further subclassified in terms of the factors that require adjustment for the achievement of those "best" uses. Perhaps, however,

the process of classification should be regarded as having two phases within itself: Classification in terms of "best" use (or use combinations) defined as "ideal"; followed by classification in terms of "best" use or uses defined as the "best practicable," or the "best attainable," taking into account the compromises with the "ideal" that the realities of the situation may impose, at least in the foreseeable future. The importance of classification is that different combinations of factors may require different lines of action.

Step 2 is concerned with policy analysis and the selection of alternative lines of action. Though it is true that realistic area classification cannot be made wholly apart from any consideration of methods for accomplishing the ends agreed upon, it is generally true also that a given end may be achieved by alternative means and methods. These methods include, for example, changes in the tenure system, in local government and public finance, in credit policies and practices; the establishment of soil conservation districts, cooperative grazing associations, rural zoning, differential taxation; and so on. We ought to consider the whole range of possibilities that promise to be helpful. That range of possibilities—let's call them tools in our kit of social instruments—runs all the way from education with reliance upon individual action, to public ownership and control.

We also need to ask ourselves such questions as these: Which is the best single instrument for the accomplishment of our land-use objectives? Does this main instrument need other lines of action to supplement and support it? Or is there no one instrument upon which main reliance can be placed to get the job done; and, therefore, do we need to use a combination of several instruments? In certain situations we may, for example, need the soil-conservation district, plus zoning, plus public purchase. We frequently have a tendency to think that some one line of action provides all the answers, when, because we are dealing with a complex of interrelated variables, the attainment of our objectives requires a combination of several tools, each of which has its advantages and its limitations.

Step 3 consists of program making. Having considered steps 1 and 2, we can now more intelligently develop a unified program of action. Nothing will do more to bring about coordination among action programs—administrative coordination, if one wishes to use that term—than procedure upon these three steps as a basis. If we do this all of us can see more clearly where we fit into the total job to be done, and coordination will be well on the way. And over-all land-use planning, conceived and carried out in a common-sense

manner, should not place interferences in the way of the action programs, which obviously must move forward without undue delay. Far from impeding programs, over-all agricultural planning should actually expedite them.

This brings us to the third important feature of our study—we must organize to facilitate coordination. This may mean new ventures, new experiments, in methods and mechanisms of agricultural coordination.

On the ground, in the watershed, in the county—here is the real foundation for coordinated rural land-use planning and action programs. In my judgment, coordination at the State, regional, and national levels must be built upon over-all agricultural planning on a local area basis. At this foundation level we must first recognize that the job will never be done right unless the available technical manpower is organized to operate as a body under a planning leader who can at all times see the problem as a whole, who can keep in mind the goal of a practical, workable plan, and can coordinate, weigh, and balance the activities of the contributing specialists toward that end. To be efficient and effective, the technicians' contribution to planning, like action itself, requires leadership, decision, and administration.

On the ground, in the watershed and in the county, we must make the county agricultural planning committees senior partners in the process. In a democracy public programs of action must be understood, approved, and supported by the people directly affected thereby, and for whose primary benefit these programs are established. Out of long practical experience on the land comes a knowledge and a judgment which is an indispensable part of that collective human wisdom which constitutes the essence of sound planning and constructive action. Necessary local and State action never will be initiated unless the citizen understands thoroughly and concretely his need and the importance of the action to himself and his neighbors. Farmer planning committees—more than 2,400 of them—are now at work in practically every agricultural county in the country. Their record to date is most gratifying.

And now we come to the State level. As is well known by all members of Department and land-grant college personnel, steps are now being taken to establish State agricultural advisory councils. Under the proposed chairmanship of the respective State directors of agricultural extension, these councils will bring into a continuing, cooperative, over-all agricultural planning activity, the leading agricultural agencies of the State, recognized farmer leaders from the different type of

farming areas in the State, the State officials of the Department of Agriculture's action programs. Space will not permit further discussion of this development here, but all readers of *SOIL CONSERVATION* will recognize its significance for achieving coordinated action through coordinated, over-all agricultural planning.

At the regional level many agricultural problems require special regional and interstate consideration. This is analogous to effective action on many of the land-use problems in our bundle of interrelated variables which cut across county or watershed lines and require State consideration. To facilitate over-all regional agricultural planning, the Department of Agriculture in 1936 appointed a coordinator for the southern Great Plains, and a few months ago, a coordinator for the northern Great Plains. The Department and the land-grant colleges in these two areas have established cooperatively two regional agricultural councils composed of the coordinators, the regional directors of the Department's action programs, Washington Department officials of operating programs not having regional offices, the State directors of agricultural extension, and others in the agricultural field. The State extension directors in turn serve as chairmen of the respective State agricultural councils. These comparatively recent developments at the regional level have proved of very great value in securing an effective coordinated Federal, State, and local attack on the serious agricultural problems of this large and troubled region.

At the national level we find that the appointment by the Secretary, somewhat less than a year ago, of a Coordinator of Land-Use Planning, and establishment of the Office of Land-Use Coordination, constituted a significant organizational development within the Department itself. The set-up, functions, and responsibilities of this office for achieving coordinated agricultural planning and action within the Department, between the Department and other Federal agencies, and between the Department and the appropriate State agencies in the land-use field, are already too well known to require further discussion here.

New needs must be met by new means and mechanisms. The emerging organizational structure for coordinated rural land-use planning, as outlined above, brings into cooperative activity those citizens and official agencies best equipped by reason of facilities, training and experience to assume primary responsibility for the No. 1 job of over-all agricultural planning-for action now before us. Their combined judgment is entitled to acceptance as valid and authoritative for

(Continued on p. 53)



One device to save water for a season's crops and to hold soil for present and future generations. This South Carolina farm illustrates one small piece of the new agricultural pattern.

That Soils and Waters May Remain Permanent Assets

By Dillon S. Myer, Assistant Chief, Soil Conservation Service

NATIONAL land-use planning in a broad sense defines prevailing land-use problems, points the way to necessary social, economic, and physical adjustments, and projects a coordinate course of action for the various agencies working toward the common objective of better land use.

The primary objectives of the Soil Conservation Service are to control soil erosion and conserve water. Since soil and water conditions are important factors in determining the use to which land properly may be adapted, plans and programs for soil and water conservation are essential elements in designing the broad pattern of national land use.

The planning of the Service, however, involves more than the development of physical measures for the protection of soil and water; also necessary are readjustments of those social and economic forces that tend to encourage the destructive use of natural resources. Accordingly, plans to control soil erosion and conserve water must be correlated with the plans of other agencies seeking similar adjustments whether physical, economic, or social in nature. Obviously, where certain social, economic, or physical adjustments are desirable in forwarding the objectives of two or more agencies, and consequently the national land-use program, joint planning by the agencies concerned leads to more effective action.

In developing the national soil and water conservation program, the Soil Conservation Service has brought the planning function into immediate contact with problems of the land. Demonstration areas have been established in distinct agricultural regions, so that erosion and water problems common over considerable areas may be solved for the benefit of those in need of this type of assistance. Broad erosion problem areas have been outlined. For most of these problem areas, the Service has provided one or more demonstrations. C. C. C. camps under the technical supervision of the Service were located on the same basis, and in the placing of camps, the type of work involved in the expected program was carefully considered so that enrollees' time can be most effectively used. Also considered in the selection of demonstration areas is the presence, or absence, of local interest. The Extension Service has cooperated throughout in determining the extent of this interest. Local farm leaders, business men, and representatives of various local organizations are consulted. Little has been left undone to determine in advance of establishment whether or not local interest warranted cooperative demonstration project work.

Immediately after an area is selected for demonstration purposes, a project work plan is developed. In this planning, all available physical and economic data are studied. The extent of different types of erosion in relation to slopes, soil types, and land use is determined by means of conservation surveys. Data on the land-use distribution to crops, pasture, range, and woods, are obtained. The extent of idle and waste land is noted. Historical and social information is sought to determine as nearly as possible the past use of all parts of the area, the growth of population, location of social and economic centers, present and past market outlets, roads and educational facilities, and similar data that will reflect possible reasons for existing land conditions, agricultural balance, and community pattern.

Often, in developing the project plan, individual farms are analyzed to determine what vegetative covers and cultural practices have furthered conservation, or allowed erosion. Cropping and fertilization practices are studied. Factual data concerning the kinds, types, and numbers of livestock, as well as the market distribution of livestock and their products, are considered. In this field, the dominant feeding and grazing practices are important. And once each distinct factor is considered in the light of other related factors, and all the information synthesized, a basis is obtained for the development of sound and coordinated project plans.

Normally, in the development of plans for project areas, certain questions reappear regularly and require individual answers according to conditions existing in the specific area. For example, the extent of land-use changes necessary in the light of erosion, slope, and soil-type information, must be determined. The changes in farming practices necessary to safeguard the desired land use must be ascertained. Machinery, equipment, buildings, and labor invariably receive particular attention. Changes in the numbers or management of livestock always warrant careful consideration. Possible market outlets for any new products must be analyzed, and if farmers do not have technical knowledge of desirable new crops or practices, some latitude in time must be allowed them that they may become properly informed and gradually adapt these changes to their already established systems of farming. The question is, How much time?

Reduced to simplest terms, the basis for project work is proper planning for each unit of land. Individual farmers assist in the development of plans for their respective farms. With the Service, they enter into 5-year cooperative agreements which outline the entire farm plan and specifically set forth the obligations of both the farmer and the Government. The farmer agrees to follow the practices stipulated in the cooperative agreement and provide as much of the labor and materials as possible. In return, the Government agrees to provide whatever technical assistance is needed as well as additional labor and materials necessary to put the plan into effect.

Proper land use is the goal for each acre of farm, and accordingly, individual farm plans, like project plans, are based on an inventory of physical and economic conditions. Included is an analysis of the demands made by the individual farmer and society on the land. Consideration is given to the location of the farm, present and possible market outlets for commodities and livestock, and other related factors. Also important in the development of a farm plan is the historical information concerning past treatment of the land, since past treatment usually accounts in some considerable degree for its present condition.

Obviously, a plan for erosion control and water conservation includes far more than blanket recommendations for individual types of treatment. There is a definite relationship between each element of the plan, and together, all the elements exert a strong influence on the farm, on the community, and eventually, on the Nation.

The demonstration work of the Soil Conservation Service has played, and is expected to play for a number of years to come, a fundamental part in the develop-

ment of a national soil conservation program. It is recognized, however, that the demonstrations are no more than a first step toward a more comprehensive program. From the standpoint of national adequacy, effective soil and water conservation requires the coordinated treatment of all lands in every part of the country and the applied cooperation of many farmers, State institutions, and Federal agencies.

The soil-conservation district provides an avenue toward this broad objective. It is a legally constituted subdivision of the State, possessed of unusual possibilities for furthering better land utilization through cooperative, community action. The responsibility for the establishment and management of the district is vested in persons within the district itself, and within the State. The district supervisors, representing their neighbors within the district area, may call on any and all agencies for assistance. Moreover, the supervisors are assisted in their requests for help by their State soil conservation committee, which may also aid the district in other ways.

The program of a soil-conservation district, to be most effective and beneficial over a long period of time, should be developed in much the same manner as that of the Service demonstration project—in the light of all physical, economic, and social conditions within its area. In addition, the program should be tempered according to the relationship of the district to large neighboring regions and to national conditions. Several governmental agencies can provide helpful information and assistance in guiding this work. For example, the Bureau of Agricultural Economics has been carrying on studies of land utilization and has participated in the determination of problem areas. This type of information is helpful not only within a single district but in providing the basic framework, or guiding pattern, for larger areas to which the programs developed for several districts would conform. In many States, county planning-committee work is progressing under the auspices of the State extension service, with Department of Agriculture agencies cooperating. Recommendations relating to revisions and changes in county land use, cropping patterns, conservation practices, local government systems, and other county features have been made. Where this type of information is available, it will be valuable in the development of district programs and work plans.

Many other examples may be given to indicate ways in which governmental agencies such as the Soil Conservation Service, Forest Service, Biological Survey, Bureau of Agricultural Economics, Farm Security Administration, Bureau of Public Roads, Farm Credit

Administration, Agricultural Adjustment Administration, Extension Service, the Agricultural Experiment Stations, and others may provide real help in the planning and development of soil-conservation districts.

Soil-conservation districts are now being established rapidly in several of the States having appropriate legislation. In most cases farmers are apparently enthusiastic about the opportunity to organize for community action and joint benefits. At the same time it is recognized that, for best results in the district undertakings, farmers should have mutual and interrelated interests. Political subdivision boundaries, such as county or township lines, have little significance in the determination of areas for soil-conservation work. More important are the topographic, climatic, land-use, drainage, and erosion characteristics. For purposes of planning, and for the general effectiveness and continuity of work, it is desirable that problems and characteristics of a district be analogous. In different words, widely varying problems and characteristics would tend to impede the rapport essential to successful operation of a district program.

The soil-conservation district, of course, is not a creation of the Soil Conservation Service; nor does the district come within the administrative purview of the Service. Created by farmers under State law, its operation is essentially local. The act of Congress, establishing the Soil Conservation Service, however, makes the control of soil erosion a national policy, and the Service an instrument in effectuating that policy. It readily follows, therefore, that the Soil Conservation Service is interested not only in the erosion-control work initiated and carried on under its direct supervision, but in all activities leading to soil and water conservation in the United States, whether conducted by individuals, private organizations, or governmental agencies or subdivisions.

Accordingly, the Service is vitally interested in furthering the proper establishment and operation of soil-conservation districts. And because they promise widespread progress in soil conservation, districts necessarily assume important proportions in Service planning. Currently, these plans anticipate a steady increase in the number of districts, and subsequently, a steady increase in the number of district requests for various types of assistance. In the discharge of its public responsibility, it is the policy of the Service to provide such aid insofar as practicable and possible.

(Continued on p. 53)

PLANNING THE A. A. A. PROGRAM

By F. F. Elliott¹

THE PLANNING of an action program such as that administered by the Agricultural Adjustment Administration, whereby practically every farmer in the United States is either directly or indirectly affected, obviously is an important as well as a complicated task. It is a task which has involved, and will continue to involve, the cooperation and assistance of a large number of people. It is not an undertaking which farmers working alone can carry through; nor can the job be done by technicians working without the aid of the farmers. For most effective results the participation of all interested parties is essential—the farmers, the soil technicians, and economists as well as the administrative staff. Planning the Agricultural Adjustment Administration program therefore is not a routine, stereotyped, blueprinted, or engineering type of procedure. It is, rather, a continuing process of modification and adaptation, either through new legislation and amendments to existing legislation, or through changes in administrative rules and regulations, changes in rates of payment, in total soil-depleting or special-crop goals.

The initial step in program development takes place, of course, in the formulation and passage by Congress of legislation under which programs are authorized. The important influence which this step has in program planning is often overlooked. But legislation under which programs are operated obviously determines the general framework within which they must be developed and sets forth the general principles upon which they are founded.

In the development of such legislation, Congress necessarily endeavors to consider all sides of the ques-

tion and attempts to coordinate and compromise the conflicting interests involved. The legislation itself either must be so drawn as to permit the administrators considerable freedom of action and discretionary authority, or must be amended from time to time in order to meet changing conditions or to provide for improvements indicated by actual operation of the program. Numerous examples could be cited of the important influence which "legislative planning" of the character mentioned has had upon the Triple A program during the past 5 years.

The second step in planning the Triple A program involves the setting up of over-all total soil-depleting, soil-conserving, or special-crop goals in the interest of furthering the objectives of the act and the development of administrative rules and regulations and the calculation of rates of payment. This step calls for analysis of the current situation and for interpretation and use of the flexible powers provided in the legislation, so that the program best will meet the needs of farmers during the time in which it is to be in operation.

The third step in the planning or development of the program involves the breaking down of the over-all goals, rates of payment, etc., by States, counties, and individual farms and the selection of soil-conserving crops and practices to be encouraged and instituted in the different regions, areas, and on individual farms. This is a function largely performed by State, county, and community committeemen, who administer the program in the various States, counties, and communities throughout the Nation. These men are themselves farmers, and are necessarily in direct contact with the farmers to whom the program applies and are thoroughly familiar with the problems which



With price and credit arrangements outside the control of even well-managed farms such as this, Congress in the last few years has provided assistance toward group action and the conservation of the soil.

the rules and regulations raise and with the modifications that are needed.

Under the program as usually developed, the community and county committeemen are given considerable discretion with respect to the adjustment and establishment of individual goals, and some discretion with respect to the interpretation of certain rules and regulations, so that the program may be best adjusted to fit the needs of the county or community in question. In addition, where rules and regulations as originally formulated do not fit local conditions and where modifications are obviously needed, the questions which are raised by the local committeemen and transmitted to the Administration through State committees usually result in modification of the program so as to ease the particular situation and to encourage participation in the program.

The work of the economists, soil technicians, and administrative staff in formulating the rules and regulations for a program under existing legislation is an annual task, and it is a process which is often referred to as planning or as program development. In carrying out this step or in developing the outline of a program under the Soil Conservation and Domestic Allotment Act and the recently enacted Agricultural Adjustment Act of 1938, it is necessary that attention be directed toward three sets of factors or influences in order that maximum results may be obtained.

The first factor to be considered in developing an agricultural conservation program is, of course, the need for soil conservation. In this field the Administration is guided by the research work, experience, and advice of the several State experiment stations and the Soil Conservation Service and the suggestions of farmers themselves with respect to shifts in the acreage of depleting crops and with respect to soil-building or soil-conserving practices which are needed in each area or region.

In general, it may be said that the systems of farming which are most desirable from this standpoint are those in which the acreage of soil-depleting crops is minimized and the acreage of soil-conserving crops is maximized. In addition, there is a large acreage in the United States on which certain practices must be carried out if the soil is to be effectively conserved. This is especially true in the Great Plains region where special practices are needed in order to prevent wind erosion, and on almost all the sloping or rolling farm lands of the United States where cropping systems and specific practices should be instituted in order to prevent gullying and sheet erosion.

But farmers find it difficult, if not impossible, to conserve their soil unless they receive an income adequate to support their families and to pay their taxes, operating expense, and interest. As a result, the second factor which must be considered by the technicians and administrators in developing a program is the income factor. Consideration must be given, therefore, to the current supply and price situation with respect to each crop or group of crops, and especially with respect to the major soil-depleting crops—cotton, corn, wheat, and tobacco. An effort must be made also to arrive at a best judgment as to the acreage of each crop or group of crops which is required during the current year in order most effectively to balance supplies of the particular commodity with demand.

For the present, the acreage available for the soil-depleting crops is sufficiently large to produce a supply that is more than adequate from the standpoint of the market, so that a downward adjustment is needed. As a result, the adjustment needed from the standpoint of income tends to coincide with the adjustments needed from the standpoint of soil conservation. Not only does a downward adjustment in the acreage of soil-depleting crops tend to bring about a better adjustment between supplies and demand, but it also leaves a larger acreage available for soil-conserving and erosion-resistant crops. It, likewise, allows the farmer to remove his least productive acreage from intensive cultivation, thus lowering his unit costs of production. This, furthermore, results, or should result, in the maintenance or increase of soil fertility, thereby serving as an effectual guarantee of adequate supplies at such time in the future as they may be needed.

The third factor which must be considered in working out acreage goals or developing a program is the requirement of supplies and acreages from the standpoint of domestic consumption and foreign demand. Although the Soil Conservation and Domestic Allotment Act and the Agricultural Adjustment Act of 1938 both have the increase of farm income as a major objective, it is also recognized that consumers' interests must be protected and that agricultural prices must not be raised to so high a level as to curtail supplies for domestic consumption. The acreage goals which are established under these acts must be sufficiently large, therefore, to allow for a per-capita consumption of the several fibers and foodstuffs equivalent to that which prevailed during the relatively prosperous period from 1920 through 1929, adjusted for trend where per-capita consumption shows a steady increase

or decrease over a reasonable period. In addition, consideration must be given to prospective export demand. It is desirable that exports of American agricultural products be maintained at as high a level as possible, provided that a reasonable price is obtained.

This consideration of the need of consumers and the export market may seem to work to the disadvantage of farmers in any particular year in that higher prices or an increased gross income for the particular year could perhaps be obtained by cutting supplies under the level needed by this standard. But in the long run it is to the interest of the farmers as well as of consumers that adequate supplies be maintained for domestic consumption, since it means a more stable market, since it indicates that farmers and consumers recognize each other's problems and are willing to cooperate in a remedial program, and since it means that the development of substitutes and shifts in consumption will be minimized.

The technicians who work on program development, then, must consider the need for soil conservation, the current and prospective supply and demand situation, and the acreage needed from the standpoint of supplying domestic consumers and export demand. But it is easy for the technicians to generalize too widely and to overemphasize their viewpoints. It is especially desirable for this reason that farmers, with their intimate knowledge of practical affairs, be directly connected with program development to serve as a counterbalancing influence. After all, it is the elected representatives of the farmers and consumers who enact enabling legislation, and it is the farmers themselves who are most directly affected by, and who are best able to judge as to the effects of, the agricultural conservation program. In addition, it is the farmers themselves who are cognizant of the peculiar conditions which affect each community or county and which tend to be forgotten by technicians or administrators who look at the problems of the Nation as a whole, or, at best, who think in terms of type-of-farming areas or regions in order to simplify and generalize their problem.

Because of this, the Agricultural Adjustment Administration has always insisted, and the current legislation provides that, the agricultural conservation program shall be administered by the farmers themselves in each community, county, and State. In addition, the Administration has endeavored to arrange its planning or program development work so as to allow for the maximum participation of the farmers generally and of the farmer committeemen in the actual work of outlining or developing the program. This has been carried on by an effort to obtain a two-way movement

of knowledge—that is, an interchange of knowledge between the administrators and technicians on the one hand and the farmers on the other, so that the ideas of each group may be presented to the other group for criticism and adjustment.

Specifically, the Administration has cooperated with the Extension Service in carrying forward the county planning project, in which farmers in each county were asked to give their opinion as to the acreages of the several soil-depleting and soil-conserving crops that were needed in the county and as to the adjustments in land use which seemed most desirable from the standpoint of a long-time land-use adjustment program.

Each year when the time comes to build a program for the following year, the farmers have been asked to express themselves with respect to a wide range of questions as to how well the current program fits their particular community or county, as to what changes are needed in acreage goals, in methods of fixing acreage allotments on individual farms, and in practices for which payments are made or credit is allowed under the program. In addition, the farmers themselves have been asked, on a number of occasions in the past, to decide important questions or policies through the use of Nation-wide referendums; and the current Agricultural Adjustment Act specifically provides that the farmers themselves shall decide by the referendum method as to whether marketing quotas shall be adopted with respect to wheat, cotton, corn, tobacco, and rice in years when supplies are burdensome and prices are depressed.

After the general outline of the program is developed and discussed with farmers and farmer committeemen, who are thoroughly familiar with the peculiar situations existing within each State, it is modified in line with their suggestions before it is put in final form and announced.

In conclusion, it should be noted that the simplest conservation program to any individual farmer is, of course, a program which precisely fits the particular conditions which exist with respect to his own farm. On the other hand, a program which is designed to obtain a certain control of acreage, to encourage soil conservation, and to be administered on a large number of individual farms under the same set of rules and regulations must necessarily cut across the interests of particular farmers and must be generalized to a considerable extent. In effect, then, each agricultural conservation program represents a compromise or a coordination of interests that can be built only through obtaining and combining ideas from as many individuals or groups as there are different situations to be

(Continued on p. 53)

SECURITY FOR THE TENANT FARMER

By Edwin R. Henson¹



Part way up the hill, the farmer pauses to consider "What lies ahead for myself and my sons?"

OUT of the task of administering relief to over 1,000,000 farm families, there is gradually being developed a technique in agricultural planning which may go far toward effecting many long-needed adjustments in agriculture and preventing recurrence of such widespread rural distress.

While many needy farm families were the victims of droughts or floods, the great majority were in distress either because they were farming unproductive lands or because they were following methods which could be successfully continued only with a relatively high agricultural price level. Many of these families had been farming efficiently and industriously; yet when the returns in agriculture fell far below normal, they found their resources entirely inadequate to support their families or even to allow them to continue in the farming business.

During this period many farm owners were unable to meet their financial obligations and, as a consequence, they lost their farms. The drastic reduction in farm income compelled many absentee owners to return to their farms, thus adding the tenants they displaced to the distressed group in agricultural areas. As a result, many families who were unable to obtain land, those operating farms with inadequate equipment, and those farming submarginal lands were eventually forced to seek assistance.

Direct relief was at first given to families in need, although it was soon discovered that many farm families did not desire this type of aid. They wanted

credit to finance their farming operations. Loans then were extended to farm families who were living on farms, while relief was continued for those unable to obtain land. Many farm families suffered severe hardships before they would accept relief. Many others secured loans to operate uneconomic farms, so that the extension of credit was merely another way of extending relief.

The opportunity for these agricultural workers to move to new agricultural areas, or into cities for industrial employment, was no longer available. What trend there was in this direction was more than offset by the fact that great groups of industrial unemployed were turning to farming, where theoretically they could at least "raise something to eat." Families moved into abandoned houses on any farm lands available. Squatters were in evidence everywhere, eking out a character-destroying existence, for the most part through charity and what little work they could find.

Various Federal and State agencies were created, or old-established agencies were asked to take on new functions, in an attempt to alleviate and eventually correct the distressed condition of agriculture. Agencies were established to effect an adjustment which would give a better return to agriculture. The appalling inroads of erosion on the productivity of much of our farm land became evident when agricultural prices fell. The Soil Conservation Service was established to assist in checking further loss. The fact that many farm families were trying to farm land

¹ Assistant Director, Tenant Purchase Division, Farm Security Administration.

so poor or so dry, or so poorly adapted to the use to which it was put, gave impetus to the land-use planning work and to the program to enable relief families to move from submarginal areas to land on which they could reasonably expect to make a living.

The extension of direct relief to needy farm families did not assist them in becoming independent, self-supporting farmers. On the contrary, this type of relief enabled many farm families to remain in submarginal areas which could not be successfully operated even with normal agricultural prices. Such families would continue to be relief clients as long as they remained on these farms.

Progress toward the rehabilitation of these farm families began with the adoption of the policy of making loans only where sound farm and home plans could be prepared, indicating an ability to repay the loan in 5 years and, at the same time, provide a living for the family. This policy placed those farmers who were on good farms on a program which, at the end of 5 years, would leave the farmer with equipment and frequently with sufficient operating capital to continue farming without any outside help. Families on farms for which sound farm plans could not be made were urged to leave, and were given outright relief until a satisfactory farm or other occupation could be found for them.

At the present time the Farm Security Administration has the responsibility of administering the funds for the rehabilitation of these low-income farm families. It is contemplated that funds available under the Bankhead-Jones Farm Tenant Act will be used to assist some of the most competent rehabilitation clients to establish themselves as farm owners. In addition to these rehabilitation clients, the Bankhead-Jones Farm Tenant Act will enable other tenants, laborers, and sharecroppers, who have never been on relief, to become farm owners.

County and home supervisors have been appointed in all counties where there are large numbers of farm families in distress. The chief function of these county supervisors is to study the needs of these families, to assist in planning their agricultural operations, and to extend such financing as is necessary to enable them to get back on their feet and become self-supporting.

In each county a Farm Security Advisory Committee, consisting of three leading farmers residing in the area, has been established to advise the county supervisor on the rehabilitation of individual farm families and the farming programs best suited to their land.

Within each State there has also been appointed by the Secretary of Agriculture a Farm Security Advisory Committee of nine men, usually including the Director of Extension Service, the Director of Vocational Agriculture, a representative of the Planning Board, and other leading agriculturalists. This committee reviews all phases of the program and suggests areas within a State where tenant purchase loans may best be made in accordance with good land use. This advisory committee goes still further in assisting the Farm Security Administration in outlining policies under which these loans will be extended, and in recommending the size and type of farm believed to be most desirable.

In areas where soil erosion is a problem, the farm plans are being checked by Soil Conservation Service experts, wherever possible, in order that the borrower may have the benefit of a sound erosion-control program from the start. The plans also are drawn to comply fully with the Agricultural Adjustment Administration program. Specialists from the agricultural colleges have agreed to assist in the planning, and in many States they are working very closely with the Farm Security advisers.

The families being assisted by this program are expected to produce as much of their living as practicable from the farm. They follow a farm and home budget which provides ample funds for a satisfactory standard of living, plus sufficient income to repay the obligation to the Government. The security of these families is further assured by the substitution of a variable payment program for the customary straight amortization payment. This variable payment system adjusts the sum due each year to the crop yield and agricultural prices in such a way that relatively small collections will be made in years of partial crop failure, while heavier payments will be required in years of good crops and high prices.

The Farm Security Administration is cooperating in an experimental way with other agencies in Coffee County, Ala., and in Union County, Iowa, in an effort to arrive at a more satisfactory method of coordinating the services of all agencies concerned with adjustments in agriculture and farm planning.

In Coffee County a planning council, consisting of representatives of the various State and Federal agencies, has been established to serve as a clearing house for the various programs in the area. The following agencies are cooperating in this service: State Agricultural College and the Extension Service, Vocational Agriculture and Home Economics, Soil Conservation Service, Land Use Planning, Forest Service, State De-

partment of Education, State Board of Health, Farm Credit Administration, Agricultural Adjustment Administration, and the Farm Security Administration.

Certain areas in Coffee County should be converted from cash cropping into forest. This would make desirable the abandonment of certain roads and schools and a considerable expansion of livestock production. As a basis for the many adjustments required, the Land Utilization Division has made a study of the entire county, indicating which areas require a change in land use in order to assure a sound, long-time farming program. The Soil Conservation Service and the State college have prepared soil maps and surveys for the area. The Farm Security Administration and the State college have cooperated in the preparation of farm programs for the various communities in the county and for the various soil types in each community, effecting the adjustments shown to be desirable by the soil-conservation and land-use surveys.

Farm Security Administration loans are extended to farmers in only those areas where the agricultural program is in accordance with the recommendations of the planning council. Similarly, loans will be extended to enable farmers to move from the submarginal areas and to establish themselves on better land. Many of the individual farm plans contemplate the reforestation or seeding to grass of large areas which are badly eroded.

In Union County, Iowa, the Agricultural Experiment Station, the Extension Service, and the Farm Security Administration have entered into a cooperative agreement, under which all these agencies will put their best efforts into planning for the 90 farms on which farmers are being rehabilitated in the county. The adjustments made will be in accordance with good land use and the Soil Conservation Service program, in order that the productivity of the soil may be maintained or increased. The specialists of the college, the Extension Service, and the Farm Security Administration will help these families in keeping adequate farm records. These records will be analyzed by specialists at the college, and further modifications of the program of each individual farmer will be made whenever this analysis indicates such changes to be desirable.

The extension of credit through loans, based on carefully prepared farm and home plans, is proving most helpful in bringing about desirable adjustments in agriculture. In many areas, adjustments which have been advocated for years by representatives of the agricultural colleges, with but little practical response, are now being carried out. Usually such far-reaching changes require an outlay of cash and equip-

ment beyond the means of the average farmer. Only when a farmer can secure funds, under favorable terms, for the purchase of necessary equipment and livestock, can he make the necessary adjustments in his farming operations.

In the purchase of farms under the Bankhead-Jones program, every effort is made to arrive at a price which is in accord with the land's productive capacity. The long-time earning capacity of the farm is used in arriving at its value. Only those farms are being purchased on which the normal return, as rent, to an owner or landlord is sufficient to pay taxes and insurance, maintain the property, and repay a loan for the purchase of the farm in 40 years at 3-percent interest.

This method of purchasing will have a stabilizing effect on land values, since long-time average yields and prices are used in calculating the agricultural value of the farm. There are areas in which land values are temporarily inflated and farmers are willing to pay more than the land will actually earn. As long as this is true, the Farm Security Administration will not be in a position to buy farms in these areas. The Farm Credit Administration and various insurance companies are likewise extending farm credit on the basis of agricultural or production value. Close cooperation among agencies extending farm credit on this basis should have a marked effect in stabilizing land values.

The goal of this program is to establish families on farms acquired at a fair price, of such a size and farmed in such a manner that the purchaser will have security of tenure and an adequate family living, and still be in a position to repay his obligation to the Government.

Farmers established on these security farms are expected to operate them with a little different philosophy, in that security of tenure, a comfortable home, adequate living, and a desirable environment are sought rather than a large cash income. Such a farming system does not mean turning back agricultural progress and resorting to hand labor. Even though these families are expected to produce as much as possible of their living from the farm, the method of financing permits them to take advantage of improved machinery and modern farm practices.

At least 5,000 farm families are expected to purchase farms with the help of the Farm Security Administration next year. Approximately 400,000 farm families will be operating their rented farms under farm and home plans and rehabilitation loans. Many of this latter group will become free of indebtedness during the year, and ready to undertake the purchase of a farm of their own.

Planning for the Land Utilization Program

By M. M. Kelso¹



THE problem of submarginal lands, toward which the land-utilization program of the Bureau of Agricultural Economics is directed, is a complex of many different factors demanding the application of many different methods of solution. Purchase and development of submarginal lands, as Dr. Gray pointed out in the July issue of *SOIL CONSERVATION*, is the leading implement whereby the Bureau as a Federal agency is moving to bring about a more constructive use of land in depressed rural areas. Analysis of the problems of each area, however, and the determination of the best methods of attack, demand consideration of a host of diverse factors varying from economic classification of land to land tenure and the financial problems of local governments.

Provision for the planning of adjustments in submarginal areas is given in title III of the Bankhead-Jones Act which includes an authorization for the Secretary of Agriculture "to cooperate with Federal, State, Territorial, and other public agencies in developing plans for a program of land conservation and land utilization, to conduct surveys and investigations relating to conditions and factors affecting, and the methods of accomplishing most effectively, the purpose of this title, and to disseminate information concerning these activities."

The development of a national program of this character involves, first, the examination of the problems of present maladjustments in land use. Such evidence as low rural incomes, excessive dependency of and occupants upon public relief and other types of public assistance, and the inability of the lands to support roads, schools, and other public services and institutions, as indicated by chronic tax delinquency and a high level of State aids in proportion to taxes collected, are among the outward symptoms examined.

Second, planning involves an economic classification of the various types of land in the areas of maladjustment, to determine the uses to which they are economically and socially suited, and the population they might be expected to support at a given standard of living under these uses.

The third step is to determine what forms of public action will best serve to bring about and maintain the uses of land shown to be desirable by the economic land-use classification mentioned above. The measures to adopt and encourage in cooperation with State and local agencies will vary with different locations and situations. Such measures may be Federal and State purchase; State and local public land acquisition through modification of existing tax-delinquency and tax-reversion procedure; public direction of private land use through rural zoning, or establishment of soil conservation districts; guidance in the more judicious use of public and private credit; or improvement in farm leasing arrangements.

Fourth, there must be coordination of Federal-State land conservation and land utilization programs of action. Many of the means for preventing or eliminating the misuses of land fall within the domain of autonomous State action. A great many of the States have become conscious of the land-use problems within their boundaries and have undertaken the formulation of policies and programs designed to correct land misuse. The attainment of the objective of a national program of land conservation and land utilization will require, therefore, a close cooperation of the Federal, State, and local Governments in the development of coordinated action.

The initial basis for planning the land-utilization program was laid in the soil surveys and other physical inventories which were begun by the Department of Agriculture and other Federal and State agencies half a century ago, and by the farm-management surveys and standard of living studies which have been conducted by the Bureau of Agricultural Economics and the State agricultural experiment stations during the past two decades. The economic aspects of land-use planning were greatly advanced by the work of the original Division of Land Economics, which was established in the Department of Agriculture in 1919.

More recent contributions to this field of planning were the land-planning activities established under the

¹ In Charge, Division of Land Economics, Bureau of Agricultural Economics.

Agricultural Adjustment Administration in 1934 and the National Resources Board. Functions of both these agencies were merged in the Land Use Planning Section of the Resettlement Administration. Following the transfer of the submarginal land program to the Bureau of Agricultural Economics in 1937, the Land Use Planning Section was merged with the Bureau's Division of Land Economics. The Divisions of Farm Management and of Farm Population and Rural Life have been brought into close association with the land-utilization program, contributing much to its planning work. The Division of Land Economics now consists of five sections—land classification, land appraisal and valuation, land policies, water utilization, and flood control. A small staff of technicians is maintained in each of about 40 States, usually at the agricultural experiment station.

Among the first activities undertaken in this planning program was preparation of a series of land-use problem-area maps, showing areas in which various types of adjustments in land use appeared desirable. The most important of these maps are those showing areas in which farm problems appear to warrant encouragement of a change from crop farming to stock ranching or forestry, or other conservational uses for all the land on some farms or all the farms in some localities—the so-called "land retirement" areas; and those showing areas in which many of the farms should be larger in order to provide an adequate family living and at the same time permit soil maintenance. Since their first preparation, which was accomplished in a few months, these maps have undergone refinement and revision. They still are being refined in small areas as local or regional land classification or land-use studies furnish more facts upon which to base the problem-area boundaries.

The focal point of the land-utilization planning work has been the area program—a survey, usually covering one or more counties in a State, to determine what devices or measures can be applied to bring about the adjustments in land use which appear to be desirable. One such study recently was completed in Forest County, Wis. Land in the county has been classified according to what appears to be its desirable economic uses, and changes in the present pattern of use and occupancy which are necessary to secure substantial conformity to the desirable economic use have been pointed out. Various means of effectuating these adjustments have also been explored, not as isolated measures, but as interrelated measures in a coordinated program. In the case of Forest County a rural zoning ordinance is already in effect, but certain changes in zone boundaries have been suggested to include more

nearly all the territory in which agriculture or year-round residence should be discouraged or discontinued. A plan is outlined for relocation of isolated nonconforming users in zoned areas; this is for the purpose of reducing costs of public services to supplement the purchase program already undertaken. The possibilities for effecting savings through county consolidation are analyzed, and alternative plans for township consolidation are set forth. Programs for Federal land purchase are analyzed in the light of their expected effect upon local economy.

Frequently such a study will unearth some State law or local administrative procedure which is helping to perpetuate the occupation and use for farming of inferior farm land. A survey in Brown County, Ind., for example, revealed the fact that State school funds, accumulated from various sources, were required by State law to be invested in farm mortgages. The money was loaned indiscriminately by county officers on good and poor land. Losses were heavy in the poor-land areas; and, because the county was responsible for interest payments to the State school fund for funds placed in the county under mortgages on farm land, those losses resulting from loans on poor land were a heavy drain on all the taxpaying lands of the county, thus encouraging tax delinquency. Availability of this credit undoubtedly permitted many farmers to remain on poor land many years longer than they could have had no such easy money been available. As a result of an exposition of this situation, remedial legislation has been proposed which would withdraw school funds from the farm-mortgage field and provide for their safer investment—an instance of cooperation with States for action to promote better land use.

Suggestions for sites for submarginal land purchase originated from these surveys. Such studies also indicate how large a part public purchase should play in any single land-use adjustment project—whether it should bear the brunt of the adjustment or play only a minor part—and what corollary measures are necessary to effect desirable adjustments on intervening or surrounding lands that should or will remain in private ownership. For example, in the Wisconsin area just cited, public purchase of a few scattered tracts would greatly expand the effectiveness for land-use adjustment of the zoning ordinance already existent there and, conversely, the existence of the zoning ordinance makes unnecessary the purchase of more than a few scattered tracts. In some other locality, a desirable adjustment program might demand practically solid purchase of an entire area.

(Continued on p. 48)

By Dillon S. Myer¹ and L. C. Gray



WATER FACILITIES AND LAND USE IN DRIER AREAS

THE PASSAGE of the Pope-Jones Water Facilities Act³ gave Congressional recognition to "... the wastage and inadequate utilization of water resources ..." which occur in the arid and semiarid parts of the West because of "... inadequate facilities for water storage and utilization." The act established a new policy for rendering Federal assistance to individuals in providing such needed facilities. To effectuate this policy the Secretary of Agriculture was authorized "... to formulate and keep current a program for projects for the construction and maintenance ..." of small water facilities in these areas. The act allows the location of these facilities on federally owned or controlled lands, but also "... on any other lands upon obtaining proper consent or the necessary rights or interests in such lands." By allowing the program to extend to individual farms and privately owned range land the restriction on Federal participation is liberalized to an extent which will allow that aid be given directly to farmers and ranchers who need such facilities.

Although additional water facilities are needed in most parts of the arid and semiarid region even in years of normal precipitation, they are more urgently needed during the frequent drought periods. Because of the lack of watering places for livestock, some parts of the range cannot be used to advantage even during normal years. The land around large numbers of water holes is overgrazed to an extent which allows erosion, while grass a few miles distant from water is not completely grazed. In years of low rainfall when some of the water holes become dry, water shortage is more acute, and the improperly utilized range area is much more extensive.

In dry-land farming areas, wells go dry during extended drought periods. This necessitates the hauling

of water for domestic and livestock use even though water may escape from the area and cause floods during parts of the year. During dry periods the grain crop upon which the farmer depends primarily for his income fails to produce adequate yields, his garden dries up, and the yield of his forage crops is so light that he has insufficient feed for his work stock. Adequate small water facilities could assist these farmers to some extent in alleviating these conditions.

Under Federal programs other than that of the Department of Agriculture some types of small water facilities have been provided, in recent years, in the arid and semiarid regions. For various reasons the personnel for careful planning and for adequate supervision of construction usually was not available, and many of the facilities therefore did not fulfill the purposes for which they were intended. Some of these programs were confined to the construction of facilities only on Government owned or controlled lands. While facilities could be provided for specific areas under this type of program, no assistance could be given to farmers and ranchers outside the areas to help them in solving their individual water-supply problems.

Under those Federal programs which were designed primarily to furnish work relief, some types of small water facilities were constructed. It was necessary to employ maximum loads of relief labor as quickly as possible and sufficient supervision often was unavailable to assure that these facilities were properly located to serve the area adequately, that there was an adequate water supply, and that they were properly constructed. Under a purely work-relief program, there naturally has been the tendency to construct an overabundance of facilities in the vicinity of ample relief labor, and too few in localities where relief labor was scarce.

¹ Assistant Chief, Soil Conservation Service.

² Assistant Chief, for land utilization, Bureau of Agricultural Economics.

³ Public, No. 399, 75th Cong., 1st sess.

A limited amount of assistance, principally in the form of loans or benefit payments, has been afforded to individual farmers under still other Federal and State programs. In general this type of assistance also would have been more effective had it been practicable to exercise a greater degree of technical supervision.

The water-facilities program is aimed toward overcoming these difficulties by carefully planning the program in advance, and by furnishing adequate supervision during construction. With a primary objective of obtaining a more efficient use of water in coordination with land use, and with authorization to assist individual farmers and ranchers, a sound and more complete use of the meager water supplies of the arid and semiarid regions should result.

Water supplies occur in what might be called units consisting of water from common sources. The unit for surface water supply is a watershed or drainage basin, and that for ground water is a ground-water province. For this reason, in planning the utilization of surface water, the supply of the entire watershed or drainage basin must be considered. In planning ground-water use, attention must be given to the supply of the ground-water area. Plans for the development of small water facilities, therefore, should be in accord with the general water plan for the watershed or ground-water province. These small facilities in the upper reaches of a watershed should complement the large downstream works in the control and use of water.

Most of the surface water supplies of the arid and semiarid regions are not subject to use for new water facilities. This is because they have been previously appropriated and put to beneficial use. Nearly all the perennial flow of the streams is covered by water rights. The water available for this purpose, therefore, is limited mostly to small amounts of ground water in localities where it is available at reasonable depths, to intermittent flow originating in snow-melt in the spring, and to storm waters.

Development of small water facilities should contribute materially toward attaining proper land use in these drier areas, and they should be planned and constructed in a manner which will assist individual farmers and ranchers in attaining this objective. In fact the program under the Water Facilities Act must be aimed toward attaining this objective, for the act specifically states that "the facilities to be included within such program shall be located where they will promote the proper utilization of lands and no such facilities shall be located where they will encourage the cultivation of lands which are submarginal

and which should be devoted to other uses in the public interest."

To accomplish desirable adjustments in range-land use, water facilities will be constructed under this program for furnishing livestock water, for the spreading of intermittent surface run-off for pasture irrigation, and to irrigate small areas for the production of feed crops.

In the drought area, where rainfall is low or variable, ground water is often a more stable and dependable source of stock water supply than are intermittent streams or normally dry water courses. Large impounding structures which will hold storm waters over long dry periods, with allowance for seepage and evaporation losses, will usually be expensive. Where ground water is available in springs or at relatively shallow depths, therefore, it can usually be developed at more reasonable costs. In such areas spring and well development will probably become a relatively important feature of the program. Where this is not practicable small reservoirs should be constructed to impound unappropriated surface run-off for livestock water.

The location of watering places on the range is an important element of water-facility planning. Where feasible within the physical limitations imposed by nature and at costs commensurate with the development of lands for such an extensive use, water holes should not be so far apart that livestock are required to travel long distances. On the other hand, they should not be so close together as to duplicate facilities within a given range area. On range with a low carrying capacity, the construction of what might ordinarily be considered a desirable pattern of watering places cannot be economically justified. But on better range land, where construction of stock-water reservoirs is the most satisfactory type of development, such facilities should normally be spaced about 4 miles apart. These primary water facilities frequently may be supplemented by small relatively low-cost structures which will aid in spreading the livestock more evenly over the area during a part, at least, of the grazing season.

Water emanating from small draws or coulees, before it has reached a well-defined channel, may be diverted and spread over range land to increase the yield of grass.

Another type of project would provide for the irrigation of units ranging from a hundred or less to a thousand or more acres. Ordinarily, dams will be built to regulate stream flow and to release water during the irrigation season to be diverted or pumped

upon the land. In most cases the water will be used to grow hay or forage crops, thus augmenting feed supplies for range stock. This will allow a larger number of livestock in an area without increased overgrazing, and will contribute to the rehabilitation of overgrazed lands by shortening the seasonal grazing period. Or it may permit the accumulation of feed reserves, during normal years, to be used in periods of drought when feed supplies are depleted.

Projects to increase the amount of pasture or of feed crops will facilitate the adjustment and stabilization of large surrounding areas of grazing land. Grazing districts or groups of cooperating ranchers may obtain through this program the type of water facility which is best suited to their needs and to the physical possibilities of the area.

Water facilities for farms may include some water supplies for pastures but will probably consist mostly of spring and well development for furnishing domestic and livestock water supplies on farmsteads. Where water supplies are sufficient, small irrigation facilities may be constructed to assure ample farm gardens and some feed for work stock. Where additional water supplies are available which may be developed at reasonable costs, these small irrigation facilities may be enlarged to allow an increase in farm livestock numbers and the inclusion of cattle for supplying the family with dairy products. This should be of material advantage, particularly in years of very light precipitation. To be of most value, these water facilities must be carefully planned to determine that water supplies will be available, to make the most efficient use of the limited water supplies, and to construct dependable facilities at reasonable costs. Since very few dry-land farmers are familiar with irrigation, the location and design along with supervision of construction and instructions for use and maintenance of the small irrigation facilities must be governmental functions.

The farmers of the semiarid parts of the West have become decidedly water-minded during the recent droughts. Many feel that their difficulties can be solved entirely by obtaining plenty of water. Experience has shown, however, that water supplied artificially must be obtained at reasonable costs to allow successful farming. In planning the water-facilities program, therefore, facilities must be furnished at costs within reasonable economic limits.

A program involving merely the construction of facilities for the conservation and use of water is not sufficient to assure the continuation of benefits from the facilities. The success of any such program is

closely allied with provision for maintenance of the structures, and the Water Facilities Act provides authorization for this maintenance. Although farmers who obtain facilities under this program must be willing to maintain them, provision for maintenance of the smaller facilities will present only minor difficulties. For irrigation facilities the annual cost of maintenance and operation is particularly significant. For the larger facilities, definite agreements to provide proper maintenance may be required under the provisions of the act.

Provision has been made to aid individual farmers and ranchers of the West in securing badly needed small water facilities, but they cannot all be supplied during the first year of the program. It is expected, however, that the program will continue in a well-planned, orderly manner in order that the water resources of the arid and semiarid West eventually may be utilized to the fullest practicable extent as a necessary auxiliary to the other resources of the region.

PLANNING FOR THE LAND UTILIZATION PROGRAM

(Continued from p. 45)

Recommendations for land-purchase sites describe briefly the present land use in the area, outline the nature, extent and seriousness of existing land-use problems, explain how public land purchase will contribute to the solution of these problems, and indicate the corollary measures needed to supplement the purchase program. They describe the character and estimate the area of the lands recommended for purchase, outline the proposed uses of the lands after purchase and locate the project area with respect to other land areas now under some organized public ownership or control.

To draw up detailed plans for submarginal-land purchase projects, which will provide well-rounded plans of adjustment for specific areas, within the general framework of recommendations described above, is the task of the Division of Project Organization. That Division is responsible for determining the exact boundaries of a project, and for selecting the tracts of land within these boundaries which should be purchased in order to facilitate the general plan of adjustment previously determined. A concrete plan for the future use of the area is determined upon, and general plans for improvement of the area are drawn up. Likewise, provision for future management of the purchased land is made which will ensure that the program of adjustments will be completed.

LAND TREATMENT AND THE CONTROL OF FLOODS

By

E. N. Munns¹

THE American citizen has asked for flood control at the source—the control of little waters. And because the management and treatment of the land affect the run-off waters, the Department of Agriculture is drawn into the picture.

The Flood Control Act of 1936 recognizes land treatment as a real factor in flood control. Although a new statement of policy, such an objective is no new story to the Department of Agriculture. Prior congressional acts recognized different phases of water control; for example, the Weeks Act of 1911 authorized purchase of lands at headwaters of navigable rivers; the Clarke-McNary Act of 1924 authorized protection and reforestation for flood control; the Soil Conservation Service Act of 1935 enumerates flood control as one purpose of the unit; a long line of appropriation acts specify water control as the objective. However, the implied coordination and integration in this flood act is new. Under the new program the Department is attempting to reorient its various activities so as to achieve correlation and integration within the framework of its existing organization. But how is this being done?



One of the millions of land-slashing, downhill rills which, collectively, help to create floods and which, singly, as here, help to focus attention on the necessity of watershed treatment and upstream engineering.

First, a Flood Control Coordinating Committee has been established. This brings actively together those bureaus in the Department most intimately concerned with the land action program. This includes both the Forest Service and the Soil Conservation Service, direct-action agencies. Because the Flood Control Act specifies that flood-control programs must rest upon an economic base, the Bureau of Agricultural Economics is added. This Committee reports policies and programs to the Secretary through the Office of Land Use Coordination. Other bureaus having an interest in the flood problem but not so immediately involved in the action program or in its economic base in the fields of their special interest are advisory to the Committee.

Second, because the program is so huge (Congress has authorized studies in every State and in Alaska), and because correlation begins on the ground, regional field coordinating committees have been established throughout the country. Membership on these field committees is the same as on the main committee. These field committees recommend the specific local program needed and develop the local plans for the work.

Now the Flood Control Act of 1936 does more than merely establish the Department of Agriculture as the agency to do supplementary flood control on a watershed basis. It also does more than merely specify the watersheds in which the Department should work. By using terminology which has been applied to definite procedures in vogue by the Corps of Engineers, it outlines the three steps involved in a program. These steps are: (1) A preliminary examination of watershed to determine the feasibility of a flood-control project; (2) a detailed survey of the critical areas in the watershed to develop the concrete action program and to determine its cost and benefits; and (3) the actual flood-control operation. The first two are planning, the third is action.

The first stage in the procedure is a preliminary examination of a watershed. This examination by the field coordinating committee determines the extent of the flood problem, the damages done, the flood source areas, and whether or not there appears an opportunity for an upstream program. This study is made rather quickly, but with sufficient care and detail to demonstrate within reasonable limits that the flood problem is of such magnitude and character as to warrant a land program. It starts with three assumptions:

¹ Chief, Division of Forest Influences, U. S. Forest Service.

(1) That the public has a definite responsibility for sponsoring a flood-control program; (2) that the benefits of control will exceed the cost unless lives and social security are directly involved, and (3) that the local people are sufficiently interested to be willing to participate actively in the program.

In determining these facts for a given watershed, the field committee obtains certain factual data as to the crops, cover, soil, and land use within the area, analyzes data on the precipitation and run-off, determines the frequency of floods and the extent of their damage, and looks into problems of occupancy and use of watershed lands that bear on the flood problem. In this examination, flood-source areas are located and the possible application of remedial measures suggested. Public hearings are held (in cooperation with the Army engineers) to obtain the local viewpoint and to determine who it is that wants protection, where, and why, and whether local participation will be forthcoming.

On the basis of their findings, the regional field committee decides either that no flood problem exists that can be cured by an economic upstream control program, or that such a problem does exist and can be so cured. A brief report on the watershed is prepared with the committee's suggestions and transmitted to Washington. Copies of this report are then circulated among all the interested bureaus for comment and criticism. Upon the basis of these comments and its own review, the Departmental Flood Control Coordinating Committee determines whether or not the report is satisfactory. If so, the field committee recommendations are upheld. Should the report be favorable to a detailed survey, a recommendation to this effect is made to the Secretary. Should it be unfavorable, the report must go to Congress in order to discharge our responsibility. In such cases, rather full reasons must be given for the action to avoid controversy with those individuals who may be interested in a particular local situation.

Is it possible that places exist where upstream control is not justified? Indeed yes. For example, floods may occur in tidal estuaries due to exceptional high tide and regardless of any device man might build upstream. Floods occur when hurricane winds blow the water out of the lake on to the land as they did a few years ago in southern Florida. Floods may occur under certain conditions in a densely forested drainage, but the damage caused may be so small as not to justify special treatment. Or, floods can occur in a stream discharging directly into the ocean or a great lake without causing any appreciable damage, as might

be the case with certain streams in the northern part of the Lower Peninsula of Michigan.

Under a detailed survey, the specific land action program is determined. This calls for an exacting study of the watershed and its problems. Whereas the findings of the preliminary examination report were based largely on opinions and sketchy data, the findings of the detailed survey must be based upon demonstrable facts. For this reason, the survey becomes a land-planning survey. Studies are made of air photos to reveal local conditions and the need for curative methods. Soils, hydrology, cover, and engineering must all be considered in developing the plan. The final plan must prescribe the methods whereby flood control is to be attained. It must outline for each portion of the watershed requiring attention the nature of the various forms of treatment, which one or ones or which combination of treatments should be utilized, where and how they should be applied, and their estimated cost, and the physical, economic and other benefits to be derived from them. The survey must consider all forms of land use and adjustments. Finally the treatment proposed should be within the economic limits set for it.

In developing the plan great skill is required because a positive separation must be made between those measures having a direct benefit in the flood-control program and those possessing auxiliary benefits but not otherwise justified on the basis of flood control as such. Similarly also, a separation must be made in the application of these same measures as between those parts of the watershed where the measures are needed for flood control and those where they are needed because of other social or economic considerations. On some of the flood-source areas an immediate program will be indicated. On others conditions may be such as to suggest that the program be deferred until the more critical situations have been met.

Under the procedure used by the War Department detailed plans for specific works of improvement are submitted to the Congress for consideration. These plans are reviewed in the House Committee on Flood Control. If the plans are accepted, Congress authorizes by legislation a special flood-control project to be undertaken in accordance with the recommended plan. Following the authorization Congress appropriates the money to carry on the work.

For its upstream control operations the Department of Agriculture is now authorized to follow another procedure. Under the Whittington Flood Act of June 28, 1938, the Department has received authorization in advance of the submission of plans to do work

on watersheds of those streams for which the War Department has already been authorized to perform certain works in the interest of flood control. Thus Congress, by legislative enactment, has requested full integration of programs between the Departments of War and Agriculture.

To date, this integration exists more on paper than in reality. For many years the Corps of Engineers has been developing its flood control plans for the major river systems. For years the engineers have been perfecting their specific action programs. Consequently, they can go forward rapidly with an action program on many streams. In the meanwhile, Agriculture must proceed slowly, gain experience, and train personnel as it develops its action program.

The job ahead for the Department of Agriculture is a big one. For the preliminary studies it involves practically 90 percent of the land area in the country. For the detailed studies it involves a large number of troublesome streams from Maine to Texas and from Florida to Alaska. It involves concentrated planning on a large scale.

The job ahead is a difficult one. It involves all kinds of land—flat, hilly, and mountainous. It involves all kinds of crops—hay, tobacco, peanuts, cotton, corn, grapes, citrus, etc. It relates to all kinds of land ownership—nonresident owners, small owners, tenants, sharecroppers. It touches our polyglot nationals of all races, creeds, and historical background.

Dependable Forests—Especially Farm Forests

By E. H. Clapp¹



THE best attainable data indicate that the 48 States contain about 615,000,000 acres of forest land—498,000,000 acres suited to timber production on a commercial scale and 117,000,000 acres supporting semiarid or subalpine types chiefly of protective or scenic value. Ownership is wide and diverse; for ex-

ample, there are 2½ million farmers who own woodlands aggregating 185,000,000 acres, plus many others whose farms would be benefited by plantings of farmwoods or shelterbelts. Forest owners other than farmers number hundreds of thousands. Future forest economy will directly affect possibly a thousand different counties or parishes, most of the States, the majority of the railroads, many other quasi-public and private institutions, thousands of dependent communities and millions of dependent people.

Forestry planning is thus an imperative and inescapable necessity, embracing (a) broad plans upon which to found general programs of national action; (b) plans of greater refinement to serve as bases for regional adjustment; (c) more specific plans for the management of lesser areas; and (d) plans of technical refinement for the guidance of individual timber operators, especially owners of farm woodlands.

In such processes of planning, farm forestry influences and is influenced by every other phase of forestry. Farm woodlands now comprise 27 percent of the Nation's entire continental forest area. In average productive quality they presumably equal, if they do not excel, the other 73 percent, and logically should provide at least one-fourth of all future timber production. Techniques of marketing thus rank in importance with techniques of silvicultural management, and the future status of the farm woodland as an appreciable element in farm economy may depend perhaps as much upon the conditions created on the nonfarm forest lands as upon those created on the farm wood-

¹ Associate Chief, U. S. Forest Service.

lands. Additionally, stable wood-using industries may be the paramount means to create local markets for farm crops or for off-season use of farm labor and equipment.

Dependable planning requires dependable knowledge. Procurement of such knowledge consequently is the initial phase of planning. The forest knowledge of the United States until recently has been largely empirical—to some degree mythical. The experience of countries in which intensive forestry has long been practiced discloses the kinds of knowledge requisite to its effective employment as an agency of social progress and economical security, but does not supply the knowledge specifically applicable to the forest type, soils, industries, social groups, or economic and political institutions, peculiar to the United States. That must all be developed, almost *de novo*, hence forest research is a major and indispensable element of all forest planning. In the Forest Service, research is planned along a wide front.

Studies of the economics of forestry are under way. They are designed to determine trends in lumber prices and in stumpage values; to calculate the costs and returns from forestry enterprises under a variety of conditions; to inquire into the status of forest-land zoning in the present organized political units; to decide what parts of the forest must be set aside for special uses such as recreation; and to ascertain the relationship of the forest to community development. One major phase of such economic studies is the forest survey, a national undertaking designed to determine the available and potential supplies of our timber resource, its location and distribution, whether or not nationally and regionally we are depleting our resource, and the present and prospective requirements for forest products—all basic to forest-land planning.

Forest-management research endeavors to determine the silvicultural practices and methods to be used in establishing, growing, tending, and harvesting the forest crop. It includes investigations of the seed and the tree, its heredity and modifications which can be made in it, the relation of the tree to its environment, and studies of the cutting practice in order to obtain the natural reproduction of the stand. It also endeavors to develop a proper understanding as to the use and control of fire in the forest. The results of such investigations bear very directly upon all planning for forests of the future.

Forest products research aids in planning for the future by developing better utilization practices in order to help balance our future timber budget.

One of the forest products is range forage. Without a knowledge of the proper use of this forage and the relationship between the minor vegetation and the forest, the harvesting of the forage by livestock can not serve its purpose in community welfare, and it may cause difficulties in reproducing the forest. To meet this situation and many other problems requires investigation of the range forage and its management.

The manner in which the forest is handled will affect the usability of its water resources for various purposes; hence, investigations are under way to determine the relation between cover conditions and water supplies so that management plans may be developed which will ensure uninterrupted supplies of usable water.

Thus, forest research has many objectives, all of them bearing directly upon the development of plans for the future.

Broad concepts of national interest in forest lands require specific action by the actual owners of the lands. Where such owners are individual citizens, this is a cooperative process in which function the State conservation agencies, State foresters, land-grant colleges, State extension services, county planning committees, organized soil-conservation districts, etc., with Federal cooperation in technical services sometimes supplemented by financial aid.

Among the objectives thus approached are (a) more adequate protection of forests against fire, insects, and disease; (b) provision of forest planting stock for farmers, in which 40 States now cooperate under the Clarke-McNary Act; (c) activities authorized by the recently enacted Cooperative Farm Forestry Act—e. g., extension services, technical assistance, cooperative marketing of farm forest products, and development of sustained-yield management programs to stabilize industrial and community life; (d) systematic and organized programs for planting of field shelterbelts, woodlands, and stream-bank and livestock protection plantations, supplemented by water-impounding dams surrounding plantations for water conservation with associated recreational potentialities; and (e) adoption by wood-using industries of better cutting practices. The general approach is to enlist the support of and associate together in cooperative relationships all the various agencies and parties involved; to determine upon the steps that are desirable and practicable of adoption; to devise feasible means of adoption; to make them widely known; and to create the conditions under which they will work.

Coincident with the scientific, advisory, and cooperative phases of forest planning for private lands are

those of planned resource management exemplified by the national forests. Planning for the protection, development, and use of the national forests is complicated by the wide diversity of problems and interests relating to their management. This is exemplified by such widely diversified conditions as are found in the old-growth forests of the Pacific Northwest, in national forests which have been established in exploited cut-over regions of the Lake States, with their stranded communities and populations, and in national forests in the South which are characterized by productive pine lands, poor farms, and rural poverty.

National forests in the devastated and cut-over regions require planning for the rehabilitation of both the physical and human resources with the greatest possible provision for permanent employment. Planning for the already productive national forests entails the same objectives, but without awaiting resource restoration.

Particularly in the national forests of the South and the northern Lake States, planning is directed toward a closer relationship between farming and forestry. Although these two regions are predominantly forested, they embrace one-half of the farms in the country. Within their limits, forestry as a supplement to farming operations offers definite promise of increased income and better living for farm families. In addition to the integration of farming with forestry in the national forests, forest-management planning requires the definition and evaluation of all beneficial uses inherent in the national-forest resources. It requires, furthermore, the development of plans of management which will recognize and encourage the widest permanent utilization of the resources in ways benefiting the greatest number of people.

The intensely intricate and complicated character of the forest as a biological entity compelled the Forest Service, early in its administration of the national forests, to recognize the indispensability of over-all or area management of forest lands for all beneficial uses, rather than a uni-functional form of management. This form of management requires a decentralized organization which, in turn, requires administrative planning that will foresee changing needs, provide the national forest administrator with sufficient freedom of action to enable him to deal with local problems locally, and ensure fair and equal treatment to all forest residents and users.

Within the national forests and their zone of influence live hundreds of thousands of people whose ways of living are directly influenced by the processes of national-forest administration and management.

As public forest lands, the national forests must be so managed not only to safeguard the Nation's timber supply and assure favorable conditions of streamflow, but also to ensure the welfare of the dependent peoples.

PLANNING THE A. A. A. PROGRAM

(Continued from p. 40)

considered. This means, of course, that the particular idea or plan advanced by any one individual or group can rarely be adopted without some change or modification when the interests of other individuals or groups are considered.

But the essence of democratic planning, under the method of program development which the Agricultural Adjustment Administration endeavors to follow is to be found in full and free discussion by all interested parties. All questions involved are thus discussed so that the farmers, the consumers, and the technicians may all be aware of the many interests affected, and of the reasons underlying the decisions which must finally be reached and written into forms and rules and regulations for the administration of the program.

OVER-ALL PLANNING, THE NEXT STEP

(Continued from p. 34)

agriculture. With this structure built and functioning, and with its responsibility recognized, agricultural agencies will be ready to put their full weight behind the next vital step in planning: the coordination of agricultural planning within itself, with industrial planning, transportation planning, urban planning, and with planning for those other big divisions of the American economic and social structure that together constitute another and much more difficult and complicated level of "over-all" planning.

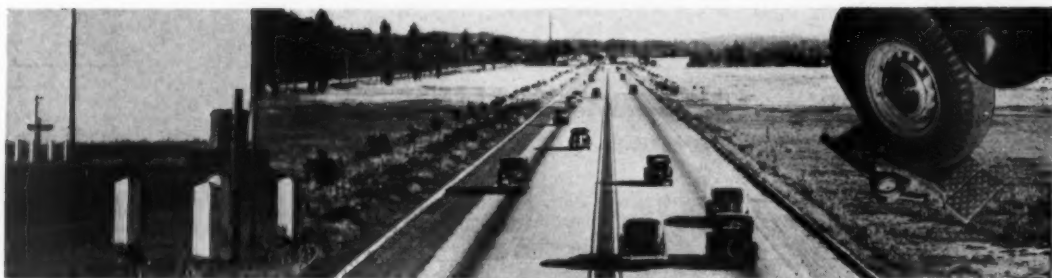
THAT SOILS AND WATERS MAY REMAIN PERMANENT ASSETS

(Continued from p. 37)

Thus, the apex of Service activity is now being moved away from demonstration areas toward districts, with cooperation the keynote. The ultimate growth and area of districts are, of course, matters of conjecture. Yet it is entirely conceivable that within the next decade they will cover a substantial segment of the country's erodible land. If this possibility materializes, no better avenue than the district will be available to the Service, and to other governmental agencies, for encouraging Nation-wide soil conservation and better land use. Looking to the future, Service planning considers such an eventuality.

HIGHWAY STUDIES SERVE MANY USES

By T. H. MacDonald¹



Automatic traffic recorder in Oregon.

Speed and safety characterize this arterial highway of the West.

Inset shows loadometer weighing operation.

THE ARTICLE "Roads to Market," published in the July issue of *SOIL CONSERVATION*, sketched the history of the Department's highway program and the background of the highway planning surveys begun in 1935 and now being carried on by 46 State highway departments in cooperation with the Bureau of Public Roads. In the following paragraphs are described the objectives of the surveys, the methods followed, and the progress made to date.

The primary objective of the surveys is to provide the facts needed in developing and maintaining an adequate national highway system. These facts include (a) the present extent and condition of all our rural roads; (b) the service rendered by the various parts of the road system; (c) the relation of road costs to the benefits obtained by road users; and (d) means by which we may meet the continuing cost of an adequate highway system.

The highway planning surveys are not projects to be closed within a scheduled time, but rather a continuing function of each State highway department and the Bureau. The intensive studies described herein make up a program of work to be accomplished within a definite period, but the data obtained in them must be kept current by continued studies from year to year if they are to retain their value.

The present extent and condition of the roads is measured by the rural road inventory. Records are made of the length, width, type, and condition of pavement of all rural roads; dimensions and condition of structures, such as bridges; the location and type of

dwelling, stores, and other culture along the roadside; and the location, type, and condition of crossings, whether at grade or separated. Insufficient sight distances, excessive grades, and inadequate super-elevation on main roads are noted. Special studies of railroad grade crossings both in cities and on rural roads are made in order to determine the order of priority of grade-crossing elimination projects. All these data are plotted on maps and summarized in statistical tables.

The service rendered by the various parts of the road system will be determined through the traffic surveys, which include traffic counts, weighing of vehicles, studies of origin and destination, and loading practice studies.

Traffic on main or primary highways is counted at key stations, where fourteen to eighteen 8-hour counts are made at different hours and on different days of the week. The whole schedule thus provides for the acquisition of samples of traffic under all conditions with its hourly, daily, weekly, and seasonal variation for a full year.

The traffic on the secondary and local roads is sampled by blanket counts made at a much greater number of points but less frequently.

The third important means of measuring traffic is the automatic traffic recorder. These devices, designed by engineers in the Bureau of Public Roads, are a very practical application of the photoelectric cell. At present, engineers of the Bureau are working on a design for portable automatic recorders using a different principle of operation. These will be used to supple-

¹ Chief, Bureau of Public Roads.

ment the photoelectric recorders, which are most effective at permanent locations.

The traffic counts represent only a part of the study of service rendered. Portable scales called loadometers are used to weigh trucks and busses at certain key stations simultaneous with the making of the key station count. The data obtained include registration numbers, the nature of the commodity or the number of passengers hauled, the weight of the load, the origin and destination, and the type of origin and destination—as farm to railroad, factory to retailer, etc.

In addition to these studies of commercial vehicles, origin-and-destination studies of private-car movements are made at some loadometer stations. Other studies of this type are to assist in determining the value of or necessity for bypass routes around congested areas.

Pit scales located at three or more strategic points are used to obtain very accurate weights of commercial vehicles and loads. The pit scale parties also measure the over-all length, maximum width, and height of the vehicle and its load, and record tire sizes, axle loads, etc. The purpose of these studies is to determine what loading practices are actually followed and found most economical by haulers—this in view of the fact that many State laws restricting the size and weight of vehicles are known to have no scientific basis and to lack uniformity.

Certain other studies which have been aptly described as relating to the dynamics of highway traffic—as distinguished from its volume and the weights of its units—have recently been added to the program. They include investigation of hill-climbing ability of motor trucks and tractor-trailer combinations, studies of speed of vehicles, and of highway capacity.

The financial survey will produce most useful data on the relation between road use and the price paid for it by the user, and the all-important information the States and the Federal Government will need in the financing of our future highway program. The fiscal study analyzes the receipts, expenditures, and debts for all purposes of the State and its subdivisions, and shows the relation of highway income and expenditure to that for other purposes. The motor-vehicle allocation study, carried on by means of questionnaires addressed to car owners, shows the urban and rural distribution of taxpaying car owners. The road-use study, consisting of personal interviews with representative car owners, arrives at estimates of total yearly travel and gasoline tax payments, the extent to which each car owner uses different classes of roads, i. e., city streets, main highways, and secondary and local

roads. The road-life study is an application of the actuarial methods used by life-insurance companies, by which the probable life of payments may be estimated from the pavement-life histories found in State highway-department records.

That transportation, and especially highway transportation, is a vital factor in our present economic and social scheme, is so obvious that it hardly need be mentioned. It is equally obvious that any really comprehensive study such as the highway planning survey is in itself a very important phase of general economic and social planning, and, as such, must take into consideration all the other phases which highway transportation affects and by which it is affected.

The detailed county-by-county study of the roads, their traffic, and the problem of financing them must be accompanied by a detailed analysis, county-by-county, of data on economic and social characteristics.

Highway transportation and the other factors in our present scheme of living are so interwoven that any planning study must coordinate the activities of many agencies. The Bureau of Public Roads is at present engaged in developing study outlines and suggestions for detailed analyses of economic and social characteristics; but the program is being developed in close coordination with other Bureaus of the Department, and with the intention of making full use of data which has been or is being obtained in other studies. On the other hand, the data which the Bureau and the States are obtaining and will obtain will be of value to every other Bureau in the Department, as well as to other agencies.

As one example of this general usefulness of the results of the surveys, there are the maps that are being made of every county in 46 States, showing all the highways by types and classes; all railways and their stations; all navigable streams and ports; air routes and airports; and the location of every farm, dwelling, church, school, factory, store, and recreational area outside municipalities. They show the transportation system in its entirety, and the relation of every part of it to every other part. It would be difficult to imagine any form of economic planning in which these maps would not be of real value. It is significant that the Bureau of the Census plans to use them in the 1940 census; that other Federal, State, and local agencies are finding daily uses for them; and that they are in great demand by power companies and industrial concerns. The making of these maps is in itself an example of coordination. Many of them were based on topographic maps of the Coast and

(Continued on p. 59)



The Land and the Perpetuation of Wildlife

By *Ira N. Gabrielson*
Chief, Bureau of Biological Survey

IN PLANNING the national wildlife restoration program the Survey seeks to provide for three requisites. The first of these is for land to be set aside upon what may be called the hereditary wildlife ranges for the preservation of all native species. From these reserves the seed stock may be drawn whenever it is necessary or desirable to restock denuded areas. Extensive game and wildlife surveys provide the information to indicate the regions where these reserves should be established with the greatest prospect of success. Provision must be made to ensure against the total loss of any species through disease or some other natural disaster that may conceivably eliminate all the seed stock on a single preserve. For example, bison are to be maintained on several widely separated ranges and similar precautions will be taken with respect to other species.

It is anticipated that seed stock from these Federal reserves may be needed to carry out State and Federal restoration programs on areas made available under land-utilization programs.

The second objective of the program is to provide for the continuation of research work to accumulate factual information applicable to current problems, and also to enable wildlife administrators to anticipate future needs. Wildlife as a resource is subjected to constantly varying conditions occasioned by many physi-

cal influences. These may be of natural origin or may result from engineering, industrial, or agricultural projects. The program is intended to furnish facts to enable wildlife agencies to obtain the most favorable results from such developments by setting up stations for regional wildlife research in selected land-grant colleges throughout the United States. Eleven of these already have been established and four more are needed to complete the project.

By attaining this objective the third requirement of the plan will also be met—that of providing for a carefully trained personnel to administer the wildlife resources of America in the future. There is now a serious lack of men who are qualified for this work. The land-grant college units will serve as research stations, and they will also offer to graduate students courses in wildlife administration similar in purpose to those offered in forestry.

The main objective of the wildlife restoration program now being developed by the Biological Survey is to prevent, if possible, the extermination of any valuable species, and to increase the numbers of such wild birds and animals to the greatest extent consistent with land-use requirements of the human population. Wildlife has a very great economic value, and it also furnishes a means for recreation and relaxation that may well become of more importance to human beings subjected to the increasing strains and stresses of modern ways of living and working than are its financial values. Several very valuable and interesting species were allowed to become extinct in those years before there was any general conception of the need for a carefully worked out wildlife conservation program that could be coordinated with agricultural and industrial activities. It is bad logic to argue that because there is no realization of a loss no loss has been suffered. The present generation of Americans never knew, nor can they ever know, the passenger

pigeon and the heath hen, and it is a certainty that modern life is the poorer for the extermination of these birds. Then, too, there is always the active possibility that the extermination of any native creature may cause grave disturbances in the complicated organic system of a country. Evidences of and realization of such damage may not appear for many years following the disaster.

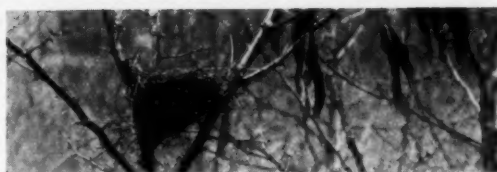


Such in brief is the philosophy underlying the restoration activities and plans of the Survey. Actually these plans have been developed over a period of more than 50 years of research and study by technicians of the Survey staff. Facts slowly accumulated throughout the period were brought together, like the sections of an aerial landscape photograph, until a definite, recognizable pattern appeared. When at last the means to proceed with a program were provided, the essential needs were known as well as the methods by which they could be met.

The principal need was for land. Bird banding, food habits, and habitat studies conducted for half a century furnished precise information as to the type of land required to support each of the many different species. It was realized that, except for the habitats of such creatures as find suitable environmental conditions upon cultivated lands, most of the areas that might be devoted to the program would necessarily be of types not adapted to profitable agricultural uses, or where the soil conservation and water control effects of the wildlife management operations would be of vital importance to the general land-utilization program.

The progress already made in acquiring such areas and developing them for wildlife uses has been discussed in a previous article and needs only to be summarized here. For the minimum requirements of waterfowl, about 7,500,000 acres of marsh and water refuge areas are needed on the breeding grounds, along the courses of the four major flyways, and on the wintering grounds used by these birds. About half of the required total has now been acquired or is in the process of acquisition. The areas making up the remainder are already known and can be acquired as means are provided.

To maintain adequate stocks of nonmigratory species, including big game and upland birds and mammals in the United States, 3,968,000 acres have now been set aside and some additional lands are needed. The



Nunivak Island Refuge in Alaska includes 1,111,000 acres. The completion of this acquisition and development program will not dispose of the problem, however, since conditions governing land use do not remain stable and immutable. They must change constantly to meet the constantly changing requirements of the people, and provision for the maintenance of wildlife must be sufficiently flexible to allow adjustment.

In addition to the regular appropriations made to the Survey for research, game management, and regulatory activities, two acts of Congress now provide moderate but continuing funds for a land utilization and development program. The first of these is the Federal Migratory Bird Hunting Stamp Act which annually supplies about two-thirds of a million dollars for land acquisition and use in the waterfowl restoration program.

The second is the Federal Aid to States in Wildlife Restoration Projects Act, authorizing the annual appropriation of amounts equal to the revenues received from the 10-percent tax on arms and ammunition. The revenue from the excise has amounted to about \$3,000,000 annually. Funds appropriated under the latter measure will be allotted to the States on a cooperative basis whereby each participating State pays one-fourth of the total cost of the projects undertaken under the terms of the act.



Inasmuch as the act principally requires and specifically encourages the State conservation agencies to use these Federal allotments to acquire and develop land for wildlife purposes, it is apparent that over a period of years many millions of acres of land will be gradually added to the total area now available for wildlife. It is of considerable consequence, too, that these projects will be supervised by the Biological Survey during development, and that the Survey is fully aware of the opportunity to exert its influence to make these operations contribute to the national soil conservation program.



BOOK REVIEWS AND ABSTRACTS

By Phoebe O'Neill Faris



Land Utilization in China, Volumes I, II, and III. By John Lossing Buck. The Commercial Press, Ltd., Shanghai; The University of Chicago Press; Oxford University Press. 1937-38.

It is suggested that before you take up this extraordinary work you journey through the land of the Tartars, now China, in the company of that thirteenth century adventurer and trader, Marco Polo. It is better to enter from the far northwest, join Mark the "wise and noble citizen of Venice" at the city of Lop and the Great Desert, follow him to Karakorum and the great plains of the North where "originally the Tartars dwelt" and where there were "excellent pasture lands, with great rivers and many sheets of water." Then take the long trail southwestward through the Province of Si-ning-fu (the name may be found still, without the hyphens, on a modern map of China) and on and on to Cathay "extending to the ocean sea." You must journey with Mark also on his travels into the Western and Southern Provinces, on errands for the "great Khan, lord of lords, whose name is Kublai," and when you have gone as far as Book the Third, "Of the Merchant Ships of Manzi That Sail Upon the Indian Seas," you may reach for Dr. Buck's book, volume I of Land Utilization in China, and learn what has befallen the land itself of that great area, now China, throughout the many centuries that it has been in the hands of swarming hordes who like Marco Polo's Tartars have "multiplied exceedingly."

It is best to read at least the first two chapters of volume I before referring to the statistical volume and the atlas. By the time you have finished chapter 2, Agricultural Regions, you will find yourself clearing a table top and pulling up a chair that you may have space and comfort for a satisfying inspection of the maps. There are 179 of them, 94 of which are crop maps; there is 1 table; there are 7 figures; there are 13 extra fine aero photos. The table shows solar and lunar calendar equivalents for the planting and harvesting date maps. There is a loose transparent sheet, showing the regions, which can be superimposed over the other maps giving data on soils, topography, temperature, and precipitation, population, crop areas, grave lands in cultivated fields, irrigated lands, flood and drought areas, forests, taxation, income, wages, labor units, cash crop, rent, ownership and tenancy, fertilizers used, animal units, human nutrition scales.

The statistical volume, at first scanning, seems a maze of detail. But read three more chapters of Dr. Buck's discussion and you are stacking volume III upon volume II and turning the pages to find among the 326 tables one headed something like this: Use of Land and Water Area (estimates); or, Farm Wages (in silver yuan); or, Uses of Rooms in Buildings Used for Combined Residence and Farm Purposes on Small Farms. And so it goes, all through this looking-behind-the-curtain of China's fine patchwork agriculture. Before you have gone much further into the study you will find yourself marveling at the tenacity of purpose of the Chinese farmer who works like the ant, passionately, who must know that his life-span is brief and hazardous—he shelters flimsily, guards his small stores only that he may eat scantily and die quickly to be buried in a grave in the very field that he has plowed.

The study had its inception 11 years ago at the second conference of the Institute of Pacific Relations at Honolulu. A year later, at the University of Nanking, a plan was drawn up and approved by the China Council and the International Research Committee of the Institute. Funds were secured and the mammoth undertaking was on its way under the guidance of economists, agriculturists, and foresters of the University of Nanking. Investigators were selected and trained, representative areas for each type of farming region were designated, and Chinese men went out to Chinese farms and villages where for 8 years they gathered detailed information relating to the underlying factors determining the trend of China's agricultural development and the welfare of four-fifths of China's teeming population—the farmers. These men visited 16,786 farms in 168 representative localities. They interviewed 38,256 farm families in 22 Provinces.

As planned by the economists at the University of Nanking the purpose of the project was threefold: "... first, to train students in the methods of research in land utilization; second, to make available knowledge of China's agriculture, for its improvement, and as a basis of national agricultural policies; and, third, to make available to people of other countries interested in China's welfare certain elementary information about land utilization, food, and population in China." No doubt most of the Chinese investigators, pushing into remote regions in quest of data, had little appreciation of the threefold purpose or of the scope of the project. They knew, however, that they were to select farms and families typical of the localities, and to ascertain and record the size of each farm and farm parcel, the cropping history of each small or large field, amounts of manures, oil cakes, and ashes used to fertilize the land, the number in the family counting all who dwelt under the roof from the head down to the brother's granddaughter, and the number of animals, usually living under the same roof as did the family—the food on the table at mealtime, the number of graves in a man's pastureland, the taxes a man paid, his income, his debts, or his savings.

By way of an introduction to the regional comparisons, Dr. Buck gives us a generalized chapter describing the peculiar characteristics of Chinese agriculture. Here he tells of the limiting factors as regards land use throughout the great area extending from Marco Polo's "ocean sea" almost to the Tibetan Mountains and from the boundary in the South to the Mongolian Desert. Rainfall and temperature, soils and vegetation variations, crop pests, erosion, racial group peculiarities and customs, transportation—all these are pointed out as the basic factors which account for the unique agricultural system employed by the millions of farmers in this Far Eastern country.

From the discussion of basic factors emerge some peculiar facts. For example, because of the inaccessibility of markets, opium as a cash crop has become adapted to mountain sides in the frontier Provinces—mountain sides which should be covered with forests. We learn too, that only 1.1 percent of all farm area is in pasture. This seems unbelievable until we realize that the four to six hundred million people who crowd the land are largely vegetarian, eating meat only on feast days, and that if an animal is to be found on the farm it is likely to be a water buffalo that pulls the plow or turns the water wheel and lives in the house with the family. We learn that a fourth of all cultivated land is terraced—stairstep hill and mountain sides, many badly eroded ones, where the people in their tenacious industry raise the food that keeps them alive for a time at least.

We learn that in China man has modified the land for farming purposes [probably to a greater extent than anywhere else in the world]. He has sliced the soil from the slopes and spread it in the valleys, for rice to feed the multitudes in the South; and in the far Northwest, in his extraordinary perseverance, he has gathered the pebbles from the streambeds and carried them to his field to mulch his soil. He has dyked and ditched for irrigation and to build lagoons for water chestnut and cress, and sometimes he has put down bamboo poles to draw out underground water. He does not know how to control the floods along his great rivers. We learn that almost all land in China is privately owned, that fragmentation of ownership is a serious economic handicap in many areas, that two-thirds of the land is twice-cropped each year, and that at harvest time there is a dearth of labor—woman labor, child labor, man labor. China's wheat harvest is about equal to that of the United States—it is practically all cut with sickles within a 2-week period.

We learn that farm production per capita is very low. The farms are so small and there are so many people. Weddings and funerals are costly. Farm wages are low, taxation of land is relatively high, most farmers are heavily in debt, the nutrition diet is insufficient, one-half of the farm people die before the age of 28. Overpopulation is serious, and this problem cannot be solved by migration and emigration. In Dr. Buck's opinion, the Chinese must work out a land-use policy under the present system of individual farm family agriculture. Can they do it? The answer to the question lies somewhere in the future, but should China emerge



BOOK REVIEWS AND ABSTRACTS

Continued



victoriously from the present war why should she not turn to this meticulous work, *Land Utilization in China*, with its wealth of data pointing directly to important needed policies and at least make the start?

The long chapter on agricultural regions which Dr. Buck has given us might constitute an exceedingly valuable volume in itself. The regionalization, based on physical factors and factors affecting type of land use and success and failure, is especially fortunate as it enables us to comprehend agricultural China as developed and persisted throughout milleniums, apart from wars, apart almost from trade, absorbing invasions and other interferences from outside.

For the purpose of the land-use comparisons, China is divided into two major regions, the wheat region and the rice region. Eight subregions are called "areas"—spring wheat, winter wheat-millet, winter wheat-kaoliang, Yangtze rice-wheat, rice-tea, Szechwan rice, double-cropping rice, southwestern rice. In the discussion of data many variations are brought to light, only a few of which can be pointed out here.

In the spring-wheat area, bordering that land to the far northwards, "where originally the Tartars dwelt," today Hans, Manchus, Mongolians, Turki, and Tibetans all swarm together to cultivate the depressions between sand dunes, the western hill and mountain slopes, and the plains which can be irrigated for wheat. According to the survey findings, here is a precarious agriculture, for the loess deposits erode easily and once the grasses are destroyed and the soils deficient in organic matter a wasteland desiccation creeps in. It is in this dry spring-wheat area that the people are seen carrying pebbles from the streambeds to their fields. Here fragmentation of land is universal, and one wonders how it will ever be possible to introduce true erosion control and to set up a land-utilization system to include dry-farming methods and an improved livestock industry to take the place of the land-destroying cultivation practices of the five peoples now occupying the area.

In the winter wheat-millet area, to the east and south of the spring-wheat area, and taking in the giant elbow of the Yellow River, they have a proverb which goes like this:

It is better to let your mother starve to death

Than to let your crop seed be eaten up.

This is the great loessial plateau of China, with soils of high natural fertility but now low in organic matter, where the millions of people live in cavelike homes carved out of the loess cliffs, practice an exhaust-the-land-and-move-on-to-new-land system of farming to produce their wheat and millet, and suffer periodic floods and famines. In this area erosion is so severe that fields must be irregular and very small because of the gullies, and areas are to be found where land rent is determined by the depth of the soil on the hills. It is not too difficult to imagine the farmer of Shansi or Fowping grimly standing guard over his millet seed while his mother starves or eats grass and bark to prolong a miserable existence.

The southern two-thirds of China comprises the great rice region and here is the land of vast networks of dykes, lakes, canals, rivers and flood plains which when coupled with a temperate or subtropical climate is especially adapted to rice culture. Here there are more people, the population increasing as we move southward until in the southwestern rice area there are 2,636 human beings to each square mile of crop area. It must have been exceedingly difficult to winnow the data from the surveys in this overpopulated land and form opinions and recommendations for land-utilization improvement. But Dr. Buck has pointed out major needs, area by area:

Flood control of the Yangtze and the Hwai in the Yangtze Rice-Wheat transitional area, with improved dyke construction and maintenance, and afforestation and pasturing of hill lands; for the rice-tea and the Szechwan rice areas he suggests that the development of communication and transportation is important and that much of the mountainous land should be in forest or special tree products; for the double-cropping rice area he points out the need for a study of the severely eroded mountainous areas to determine whether they should be forested or grassed, and drainage as a spe-

cial problem in the delta area; for the southwestern rice area he recommends "improved transportation to other parts of China . . ." so that " . . . the growing of the opium poppy could be more easily suppressed and the mountain sides could be devoted more readily to uses such as forests and special tree products."

Following his discussion of regional data, Dr. Buck presents chapters on the topography of China, the climate, the soils, "The Land" in which are some interesting features outside the survey data, land utilization practices entirely peculiar to China, crops grown and how utilized, livestock and fertility maintenance, size of farm, farm labor, prices and taxation, marketing as related to agriculture, population, nutrition, and standard of living. We are given an idea of the amazing altitudinal variations throughout China's agricultural areas, and from the climatic studies we acquire an understanding of China's famines as caused by droughts and floods. We read a detailed description of the soils and of erosion throughout the land, and an analysis of China's farm business from almost every conceivable angle. In the recommendations for China's "partial cure" we see some hope for China and a warning for the United States—that we may never know the day or the year or the century when we must include between the covers of an agricultural atlas a "record of famines" as caused by droughts and floods, by ruined soils, by overpopulation or by any other "modification of the land by man."

HIGHWAY STUDIES SERVE MANY USES

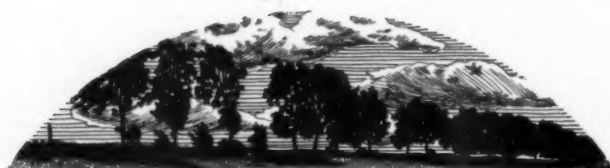
(Continued from p. 55)

Geodetic Survey, or on maps produced by other agencies. In several States, aerial photographs produced by the A. A. A. are being used both in making and checking the road inventory maps.

Such information as the volume and distribution of traffic on the highways, the extent of commercial movement of commodities and passengers, and other traffic data, concerns every bureau or commercial agency interested in marketing problems. In the collection of the data the States have been assisted by the Forest Service, the National Park Service, railroads, truck and bus operators, and other groups.

The relation of the highway planning surveys to the land use studies has already been discussed in the article "Roads to Market" (SOIL CONSERVATION, July).

Many other examples could be cited. Let it be sufficient to say that the data so far collected and analyzed in the highway planning surveys not only prove the value of the studies taken as highway planning exclusively, but also serve as a source for all kinds of economic planning, and therefore as a reservoir of information to be drawn upon by every bureau in the Department. The reservoir is being filled not only by the research activities of the State highway departments and the Bureau of Public Roads, but by the activities of many agencies within and outside the Department.



New Year Book.—The 1938 Yearbook of the Department of Agriculture, now in press, deals with soils. It is in five parts, with a summary by the editor. Part 1 pertains to public purposes in soil use and to problems, causes, and remedies. Part 2 discusses tillage, fertility, erosion control, irrigation, and drainage. Part 3 covers relationships between the soil and plants. Part 4 deals with fundamentals of soil science. Part 5 is a survey and description of the soils in this country, illustrated by a map. Information regarding availability of the yearbook will be given in a later issue of SOIL CONSERVATION.